

SECTION 8.3

STORMWATER

8.3.1 INTRODUCTION

Each of the Alternatives described in this DEIS involve development on the Project Site that would increase impervious area and thus stormwater runoff. Stormwater management during and after construction and the use of Best Management Practices (BMPs) approved by the Massachusetts Department of Environmental Protection (MassDEP) should mitigate potential impacts to water quality by controlling stormwater runoff volume and discharge rates and by treating stormwater by removing pollutants prior to discharge to downstream surface waters. The on-site and off-site stormwater management systems for the casino and related facilities will be designed and implemented in a manner that will not violate applicable surface water quality standards. More specifically, the proposed stormwater management systems will comply with the EPA NPDES General Permit for Discharges from Construction Activities and MassDEP Stormwater Management Standards.

The MassDEP Stormwater Management Standards were incorporated into the Massachusetts Wetlands Protection Act Regulations (310 CMR 10.00) and Massachusetts 401 Water Quality Certification regulations (314 CMR 9.00) on January 2, 2008. The Standards address water quality (pollutants) and water quantity (flooding, low base flow and recharge) by establishing standards that require the implementation of a wide variety of stormwater management strategies. These strategies include environmentally sensitive site design and Low Impact Development (LID) techniques to minimize impervious surface and land disturbance, source control and pollution prevention, structural BMPs, construction period erosion and sedimentation control, and long-term operation and maintenance of stormwater management systems.

Additional information on these topics is provided below. Refer to the technical report entitled “Conceptual Stormwater Management Plan for Land-Into-Trust Casino Site” in **Appendix D** for additional detail relative to on-site work. Similar reports have been prepared for the Route 24/140 interchange work and the proposed Route 140 Northbound Ramp. These are provided in **Appendix D**.

8.3.2 STORMWATER MANAGEMENT SYSTEM

8.3.2.1 Alternative A: Proposed Development

Project Site

As described in **Section 7.3**, existing stormwater infrastructure for the currently developed portions of the Project Site includes detention basins, sediment forebays, grassed swales, deep sump hooded catch basins, and infiltration systems designed to promote groundwater recharge constructed between 2007 and 2011. The existing stormwater management components and the sub-catchment areas they treat are depicted on **Figure 7.3-1**.

The proposed stormwater management system for the Project Site under Alternative A, the Proposed Development, includes upgrades and improvements, described below to the existing stormwater infrastructure. These upgrades and improvements include the introduction of a number of new BMPs to collect and treat stormwater runoff, as prescribed in MassDEP's "Structural BMP Specifications for the Massachusetts Stormwater Handbook, Volume 2, Chapter 2." These BMPs include both LID techniques and structural measures providing stormwater quantity and quality management. Collectively, these BMPs will function to avoid and minimize potential adverse water quality impacts to the Cotley River and adjacent wetlands and waters of the U.S. The proposed stormwater management BMPs are depicted on **Figures 8.3-1 and 8.3-2**, Conceptual Stormwater Management System for Proposed Development.

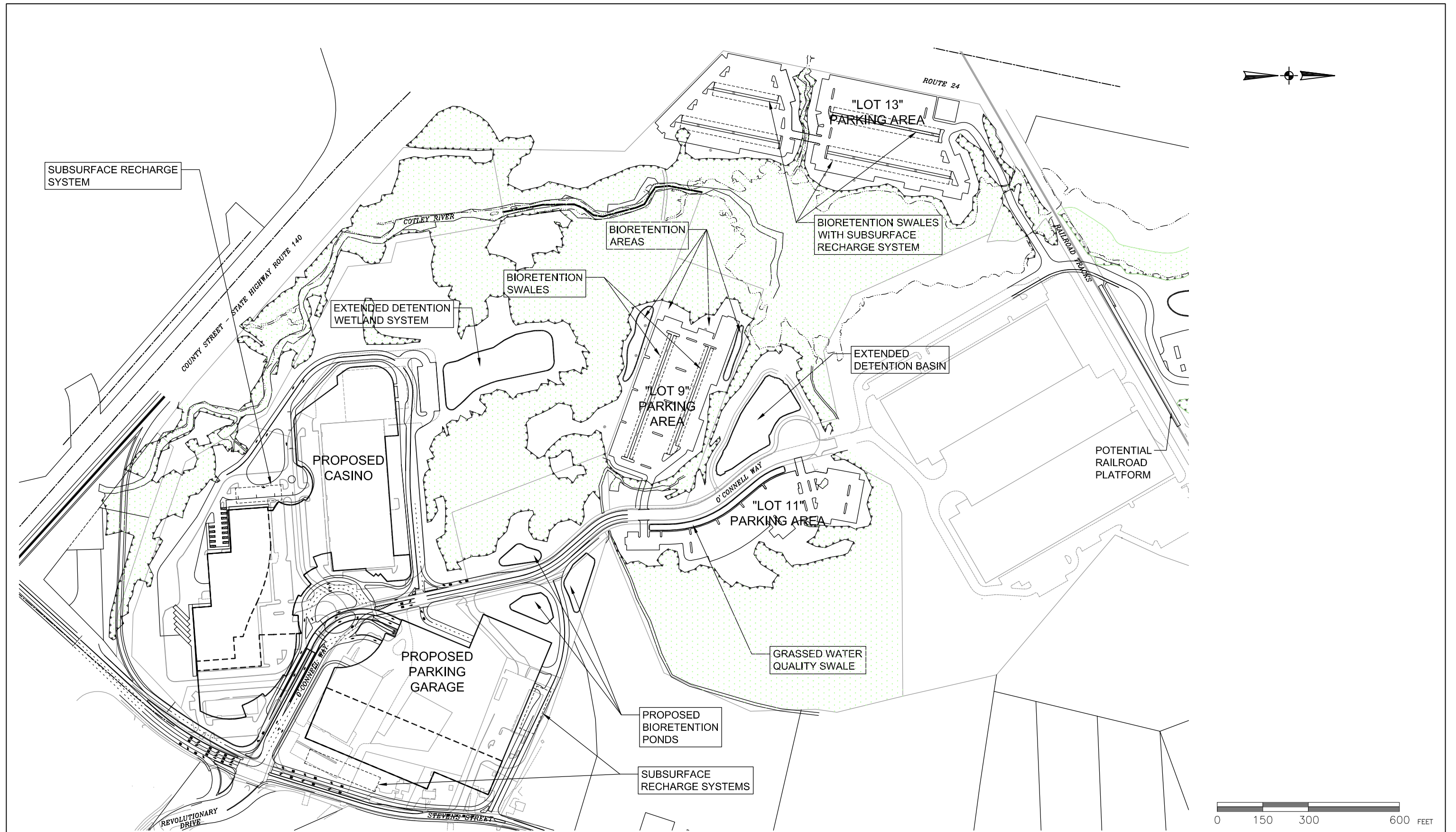
The proposed paved and impervious areas of the development are the primary target area for water quantity and quality control measures. Runoff from the majority of the paved areas will be captured in deep sump catch basins and then conveyed to grassed swales and sediment forebays in the existing detention basins currently servicing the industrial park and O'Connell Way where physical settling of pollutants will facilitate the removal of total suspended solids (TSS). Riprap pads will be installed down gradient of the detention basin outfalls to minimize erosion and induce sheet flow conditions. Runoff from the surface parking areas will be captured in surface bioretention ponds/swales or rain gardens for initial pollutant removal prior to discharge to either subsurface detention/retention areas or above ground extended detention wetland systems. Descriptions of the structural BMPs considered in the design of the stormwater management facilities proposed for the Project Site are provided below in **Table 8.3-1**. The selected BMPs and other design elements are presented in **Figures 8.3-1 and 8.3-2**.

TABLE 8.3-1
STRUCTURAL STORMWATER BMPs FOR THE PROJECT SITE

Structural BMPs	Description
Hooded Catch Basins with Deep Sumps	Stormwater from the majority of the existing (and proposed) roadways will be collected in a closed conduit piping system fitted with 4-foot, deep-sump catch basins with hooded outlets. Catch basin sump systems are effective devices for removal of large matter and pollutants that adsorb to sediments and other particulates. Catch basins with sumps and hooded outlets are designed to trap sediment particles and floating contaminants (e.g., oil and greases), which are typically the most significant constituents of the urban runoff pollutant load. Regular maintenance and cleaning of catch basins is required to assure adequate performance of these structures.
Extended Detention Basin with Sediment Forebay	Runoff from the roadway and parking areas, once routed through the initial pollutant attenuation stage of the collection system, will be conveyed to the existing extended detention basin located at the end of O'Connell Way. The existing extended detention basin has been designed with a sediment forebay and a multi-stage outlet control structure to extend the detention time of runoff within the basin and to enhance sediment deposition. Water quality treatment will be provided by capturing the required water quality volume (1.0 inch of runoff over the contributing paved area) within the sediment forebay, trapping particulates and allowing treated stormwater to slowly outlet through a stone filter berm to the detention stage of the basin. The detention stage of the basin will serve to attenuate flow rates and, through extended detention time, encourage infiltration of the treated stormwater.

**TABLE 8.3-1
STRUCTURAL STORMWATER BMPs FOR THE PROJECT SITE (CONTINUED)**

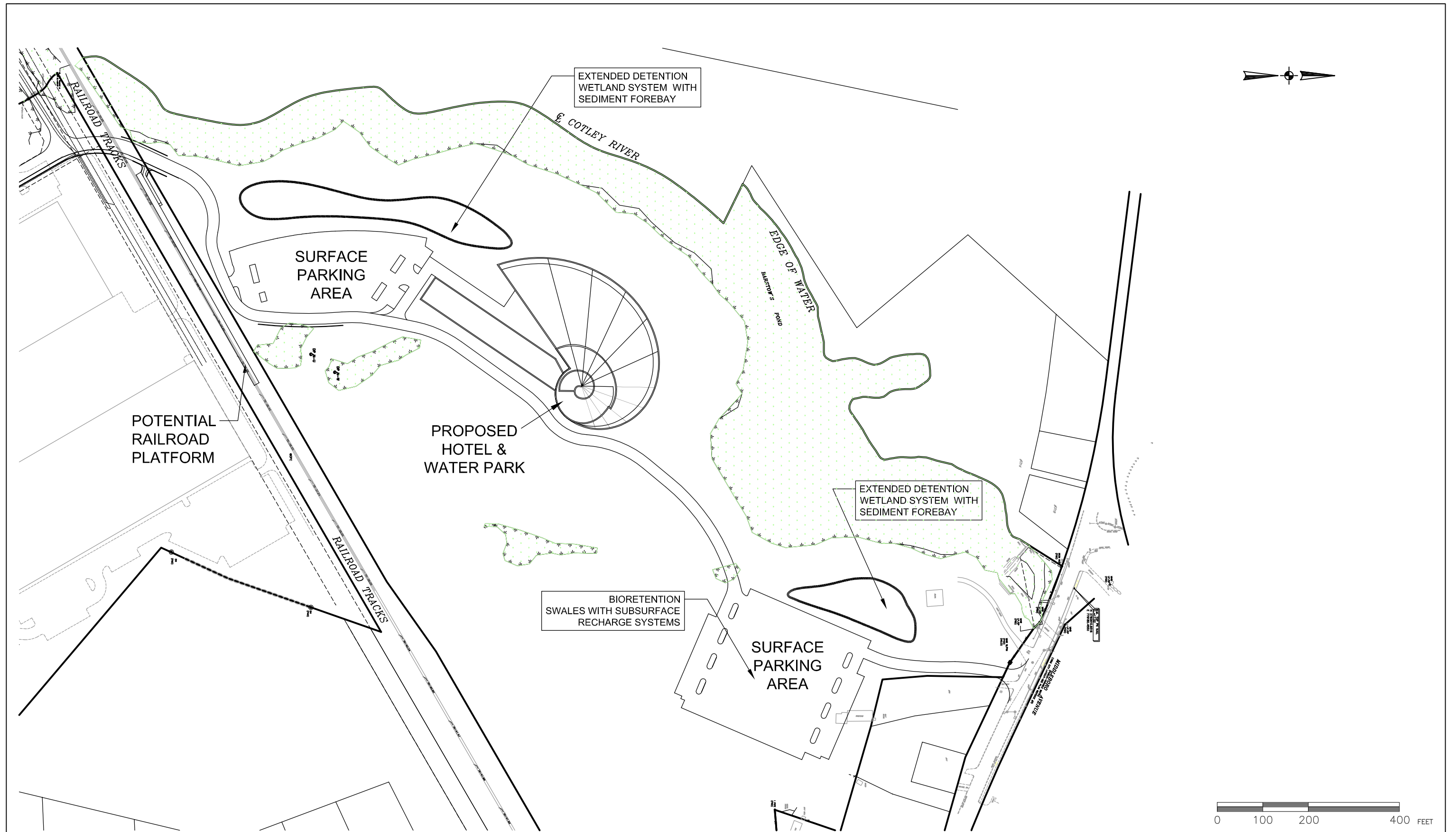
Structural BMPs	Description
Extended Detention Wetland System with Sediment Forebay	For the areas currently flowing to the large combined existing extended detention basin, runoff from a portion of the roadway, parking/loading areas and building, once routed through the initial pollutant attenuation stage of the collection system, will be conveyed to the existing sediment forebay. The existing extended detention stage of the basin will be modified to function as an extended detention wetland with excavated areas and native plantings to provide a constructed wetland stage of the facility. Water quality treatment will be provided by capturing the required water quality volume (1.0 inch of runoff over the contributing paved area) within the sediment traps, trapping particulates and allowing treated stormwater to slowly outlet through a stone filter berm to the detention stage of the basin. The detention stage of the basin will serve to attenuate flow rates and, through extended detention time, provide for additional treatment and pollutant removal. Additional pollutant removal will be made possible by biological treatment performed by the diverse variety of wetland plants being proposed within the constructed wetland stages of the extended detention/constructed wetland system. Storage volume is provided in the extended detention wetland system above an outlet "low-flow" orifice to provide attenuation of the runoff for larger storm events.
Level Spreader Sump	A level spreader sump will be provided down gradient of all stormwater management BMPs to reduce the channeled flow velocities and induce non-erosive sheet flow conditions prior to discharge to the receiving wetland.
Subsurface Recharge Systems	Where feasible, roof drainage from the proposed building structures will be serviced by individual subsurface recharge systems. In areas where unsuitable soils and/or groundwater conditions prohibit the proper placement of subsurface recharge systems, above ground retention storage will be provided. Systems intended to accept roof drainage will be connected directly to the roof leader systems and will consist of high density polyethylene leaching chambers in a trench configuration, encased in an envelope of washed stone.
Water Quality Swale	A multi-cell water quality swale will intercept runoff from parking areas. The water quality swale will be partitioned with filter berm check dams to extend the stormwater detention time and promote infiltration through the sub grade.
Bioretention Swales/Areas	Stormwater from much of the paved remote surface parking areas will discharge directly to bioretention areas which are also effective devices for removal of large matter and pollutants that adsorb to sediments and other particulates. The bioretention areas consists of depressed areas which allow pollutants to settle out prior to discharging either via a surface spillway or a closed piping system to additional stormwater BMP's for further treatment and flow attenuation. The bioretention areas are constructed with a mulch surface over a soil amendment zone which will also promote some recharge in the remote areas of the site.



SOURCE: FIELD ENGINEERING CO. INC.

Mashpee Wampanoag Tribe - Fee to Trust Acquisition - Draft EIS

Figure 8.3-1
CONCEPTUAL STORMWATER MANAGEMENT SYSTEM PLAN
PROPOSED ACTION-LIT SITE (SOUTH OF RAILROAD TRACKS)



SOURCE: FIELD ENGINEERING CO. INC.

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Figure 8.3-2
CONCEPTUAL STORMWATER MANAGEMENT SYSTEM PLAN
PROPOSED ACTION-LIT SITE (NORTH OF RAILROAD TRACKS)

The capacity of the stormwater management system described above and presented in **Figures 8.3-1 and 8.3-2** will sufficiently meet the needs of the Project Site under full development of Alternative A. The proposed stormwater management system has been designed to provide the required water quality volume (based on one inch of runoff over the paved areas) and recharge volume (various volumes based on total impervious area and soil types) as specified in the Massachusetts Stormwater Handbook. The overall storage capacities in the various stormwater BMPs have been calculated to determine the provided water quality volume in the conceptual stormwater management system design. The dead storage capacities below any outlets within the various stormwater recharge BMPs have been calculated to determine the provided recharge volume. A summary of the required and provided water quality and recharge volumes for Alternative A is included in **Table 8.3-2**, below. More detailed information related the required treatment capacities of the proposed stormwater management system is also included in the Conceptual Stormwater Management System Report in **Appendix D**.

**TABLE 8.3-2
STORMWATER MANAGEMENT SYSTEM TREATMENT CAPACITIES (PROPOSED DEVELOPMENT)**

Water Quality Volume Required	Water Quality Volume Provided	Recharge Volume Required	Recharge Volume Provided
2.21 acre-feet	7.49 acre-feet	1.18 acre-feet	2.08 acre-feet

A preliminary hydrologic analysis for pre- and post-developed conditions evaluates potential impacts to on-site wetland resource areas and adjacent properties during storm events. The post-development hydrologic analysis that is presented in the Conceptual Stormwater Management System Report takes into account the most intensive of the three Development Alternatives (Alternative A). A summary of the pre- and post-development conditions for the various Analysis Points of the Project Site is provided in the following **Tables 8.3-3 and 8.3-4**. More detailed information related to the hydrologic analysis, including a description of all of the pre- and post-development watershed areas and a description of the Analysis Points, is provided in **Appendix D**.

**TABLE 8.3-3
PRE-DEVELOPMENT HYDROLOGIC ANALYSIS SUMMARY**

Storm Event	Analysis Point 1 Rate of Flow	Analysis Point 2 Rate of Flow	Analysis Point 3 Rate of Flow	Analysis Point 4 Rate of Flow	Analysis Point 5 Rate of Flow	Analysis Point 6 Rate of Flow
2-year	26.80 c.f.s.	10.17 c.f.s.	1.14 c.f.s.	3.23 c.f.s.	20.59 c.f.s.	1.74 c.f.s.
10-year	55.11 c.f.s.	17.60 c.f.s.	2.97 c.f.s.	8.98 c.f.s.	41.05 c.f.s.	3.21 c.f.s.
100-year	121.63 c.f.s.	31.01 c.f.s.	6.85 c.f.s.	21.37 c.f.s.	80.63 c.f.s.	5.93 c.f.s.

**TABLE 8.3-4
POST-DEVELOPMENT HYDROLOGIC ANALYSIS SUMMARY (PROPOSED DEVELOPMENT)**

Storm Event	Analysis Point 1 Rate of Flow	Analysis Point 2 Rate of Flow	Analysis Point 3 Rate of Flow	Analysis Point 4 Rate of Flow	Analysis Point 5 Rate of Flow	Analysis Point 6 Rate of Flow
2-year	24.20 c.f.s.	0.39 c.f.s.	0.90 c.f.s.	3.06 c.f.s.	***	***
10-year	45.33 c.f.s.	0.66 c.f.s.	2.12 c.f.s.	8.00 c.f.s.	***	***
100-year	96.56 c.f.s.	12.13 c.f.s.	4.64 c.f.s.	21.27 c.f.s.	***	***

As the above tables show, the preliminary hydrologic analysis indicates that the stormwater management system design for the Project Site under the Proposed Development will meet or reduce peak runoff rates for the 2-, 10- and 100-year, 24 hour, Type III storm events from the pre-developed levels at Analysis Points 1-4. A detailed preliminary post-development hydrologic analysis for Analysis Points 5 and 6 has not performed as of the completion of this summary, however, the detention areas for those Analysis Points (located north of the railroad tracks) will be designed to comply with all aspects of the Stormwater Management Policy. Conceptual layouts of the stormwater management systems for these Analysis Points are included in **Figure 8.3-2**.

The proposed system, regardless of the selected Alternative, would comply with MassDEP's stormwater standards as follows:

- The system incorporates an environmentally sensitive design and proven LID techniques;
- Standard 1 - No New Untreated Discharges: No new stormwater outfalls will discharge untreated stormwater directly to or cause erosion in wetlands or waters of the U.S. or Commonwealth of Massachusetts;
- Standard 2 – Peak Rate Attenuation: Post-development peak discharge rates will not exceed predevelopment peak discharge rates for the 2-year and 10-year 24-hour storm events;
- Standard 3 – Groundwater Recharge: The intent of this standard is to ensure that the infiltration volume of precipitation into the ground under post-development conditions is at least as much as the infiltration volume under pre-development conditions. Accordingly, the annual recharge from the post-development site will approximate the annual recharge from pre-development conditions based on soil types. This standard is met when the stormwater management system is designed to infiltrate the required recharge volume as determined in accordance with the Massachusetts Stormwater Handbook.
- Standard 4 – Water Quality: The stormwater management system will remove at least 80 percent of total suspended solids (TSS) from the stormwater runoff.
- Standard 5 – Land Uses With Higher Potential Pollutant Loads: Because the Project Site is classified as a Land Use with a Higher Potential Pollutant Load (LUHPPL)¹, project engineers selected BMPs that have been approved by MassDEP for use in such areas.
- Standard 6 – Critical Areas: No discharges are proposed near or to a critical area² as defined by MassDEP regulations including the vernal pool located north of the railroad tracks in Wetland Series 7.

¹ Land Uses with Higher Potential Pollutant Loads mean the following land uses: land uses identified in 310 CMR 22.20B(2), 310 CMR 22.20C(2)(a) through (k) and (m), 310 CMR 22.21(2)(a)1. through 8., and 310 CMR 22.21(2)(b)1. through 6.; areas within a site that are the location of activities that are subject to an individual NPDES permit or the NPDES Multi-sector General Permit; auto fueling facilities (gas stations); exterior fleet storage areas; exterior vehicle service and equipment cleaning areas; marinas and boatyards; parking lots with high intensity use; confined disposal facilities and disposal sites.

² Critical areas include Outstanding Resource Waters as designated in Massachusetts Surface Water Quality Standards (314 CMR 4.00), Special Resource Waters as designated in 314 CMR 4.00, recharge areas for public water supplies as defined in 310 CMR 22.02 (Zone Is, Zone IIs and Interim Wellhead Protection Areas for ground water sources and Zone As for surface water sources), bathing beaches as defined in 105 CMR 445.000, cold-water fisheries as defined in 310 CMR 10.04 and 314 CMR 9.02, and shellfish growing areas as defined in 310 CMR 10.04 and 314 CMR 9.02.

- Standard 7 – Redevelopment Projects: A portion of the project involves redevelopment and a description of all measures that have been taken to improve existing conditions is provided in the Stormwater Management Report provided in **Appendix D**.
- Standard 8 – Construction Period Pollution Prevention and Erosion and Sedimentation Control and Standard 9 – Operation and Maintenance Plan: While the specific structural BMPs identified above will enhance water quality by removal of pollutants, non-structural practices are particularly effective in source reduction prior to routing through the treatment train. For example, all roadways and parking areas will be swept twice annually (fall and spring). The sweeping program will remove contaminants directly from the paved surfaces prior to their uptake by the stormwater runoff. With regard to operations and maintenance, all structural components of the stormwater management system will be inspected and maintained on a regular basis. Catch basin sumps and hoods will be inspected twice annually. Any accumulated sand and sediment the sumps (greater than 6 inches thick) or debris in the hoods will be removed. Any accumulated debris and litter within the stormwater management basins and water quality swales will be removed at least twice annually or more frequently as needed. Excess sediment (greater than six inches thick) that accumulates in the forebays will be removed annually or more frequently as needed.
- Standard 10 – Illicit Discharge: An Illicit Discharge Compliance Statement will be submitted prior to the discharge of any stormwater to post-construction BMPs.

Off-Site Stormwater Management

As explained in **Section 7.3** of this DEIS, in the off-site locations where proposed roadway improvements will occur the existing stormwater management systems generally consist of curbing, piping, catch basins and drainage swales that discharge through culverts and flared end pipes towards wetlands and streams located on either side of the roadway surfaces and intersections.

Under Alternative A, the project proposes to upgrade the existing stormwater management systems located at the Route 24/Route 140 intersection and construct a new stormwater management system for the proposed Route 140 Northbound Entrance Ramp. This work will comply with the same aforementioned MassDEP Stormwater Standards identified above for the Project Site. A more specific description of the work is provided below. With the exception of potentially installing new catch basins or water quality units, no significant modifications are proposed to the stormwater management systems located at the other roadway improvement locations. Accordingly, these areas are not described herein.

Route 140 Northbound Entrance Ramp from Stevens Street

As described in **Section 4.3.6** and **Section 8.1.3.4**, this EIS provides evaluations on two access/egress options under Alternatives A and C. Option 1 involves the construction of the Route 140 Northbound Ramp from Stevens Street. The new entrance ramp would allow vehicles leaving the casino to turn right freely from O'Connell Way onto Stevens street, bypass the Stevens Street/Route 140 Northbound Entrance/Exit Ramp intersection, and flow directly onto Route 140 northbound.

Under Option 1, stormwater runoff generated by the Route 140 Northbound Entrance Ramp would be collected in a closed drainage system. Deep sump catch basins would collect the roadway runoff and then the water would be discharged into a water quality treatment unit. Once the stormwater passed through the water quality treatment unit it would likely be recharged into the ground through an infiltration BMP installed below the proposed roadway. As noted above, MassDOT would be responsible for the long term operation and maintenance of the stormwater facilities consistent with its standard procedures.

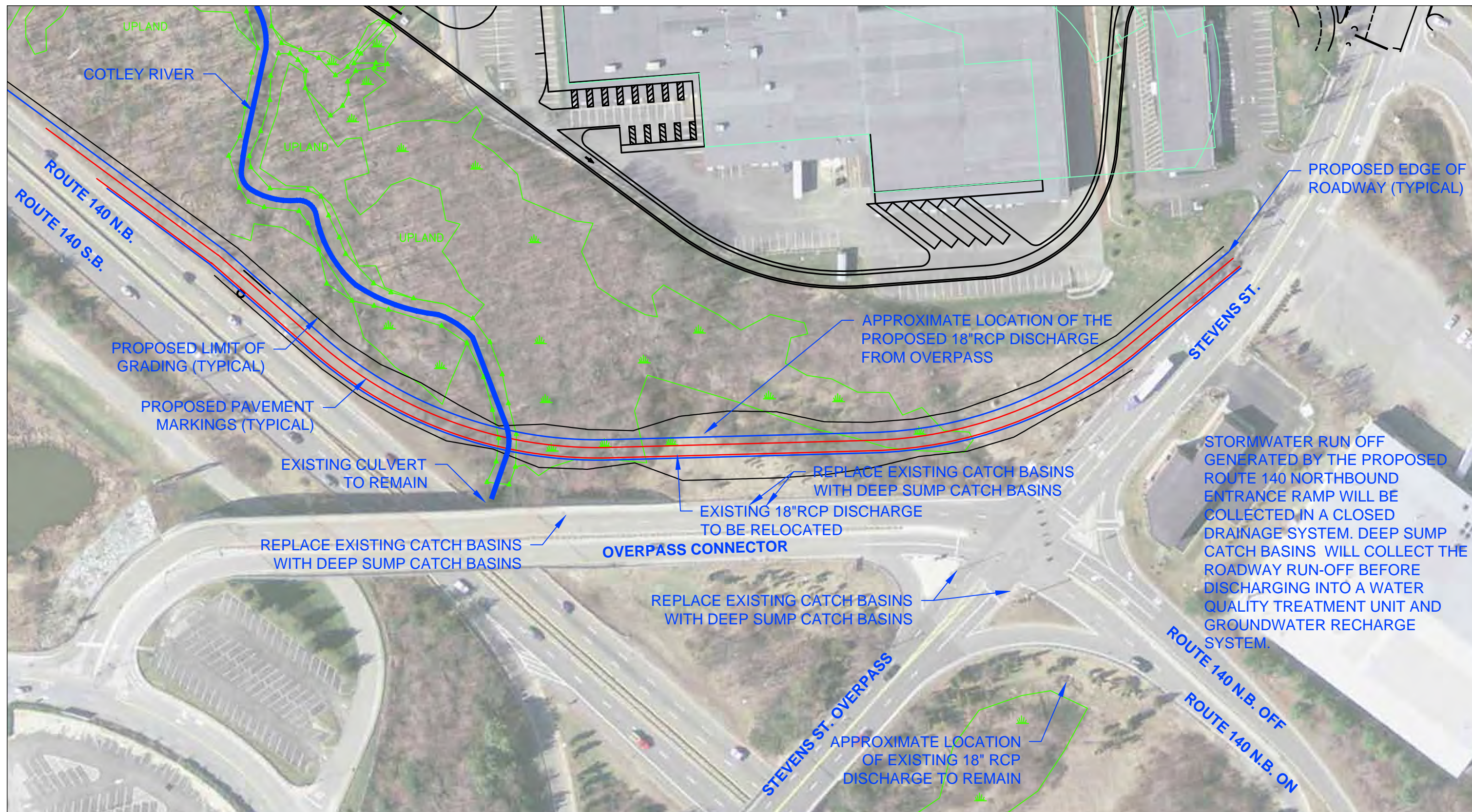
The proposed stormwater management BMPs for the Route 140 Northbound Entrance Ramp are depicted on **Figure 8.3-3**.

If the Route 140 Northbound Ramp were not constructed, the Option 2 approach would involve improvements to Stevens Street including signalization and construction of a wider cross section. Under Option 2, the existing stormwater management system on Stevens Street would be upgraded to accommodate the roadway widening necessary to improve the traffic flow. These upgrades would likely include new deep sump catch basins, piping, and water quality units.

Route 24/Route 140 Intersection Improvements

As described in **Section 4.3.6** and **Section 8.1.3.4**, this EIS considers two options for off-site traffic improvement to the Route 24/Route 140 interchange. Option 3 includes the construction of a new ramp from Route 24 Southbound to Route 140 Northbound in addition to improvements to Route 140 at intersections with the Route 24 Northbound and Southbound ramps. It is anticipated that these improvements will qualify as a Limited Project under the Massachusetts Wetland Protection Act with the goal of meeting the MassDEP Stormwater Standards to the extent possible. Proposed stormwater BMPs have been identified to address the work on Route 140 and at the ramp intersections. Further design development will be necessary as part of the permitting process to finalize BMPs for the construction of the new ramp. Located in an area that is predominately occupied by wetlands, there are limited opportunities to provide BMPs within the new ramp alignment. The recommended approach to addressing stormwater requirements consists of providing additional treatment at BMP # 2 and treating existing stormwater on Route 24 using potential BMPs # 4 and # 5. These proposed BMPs are shown on **Figure 8.3-4**.

Option 4 includes the improvements along Route 140 and at the Route 24 ramp intersections associated with Option 3 with the exception of the construction of the new ramp. BMPs have been conceptually developed that meet the stormwater standard associated with these roadway improvements. The proposed stormwater management BMPs are depicted on **Figure 8.3-5**.

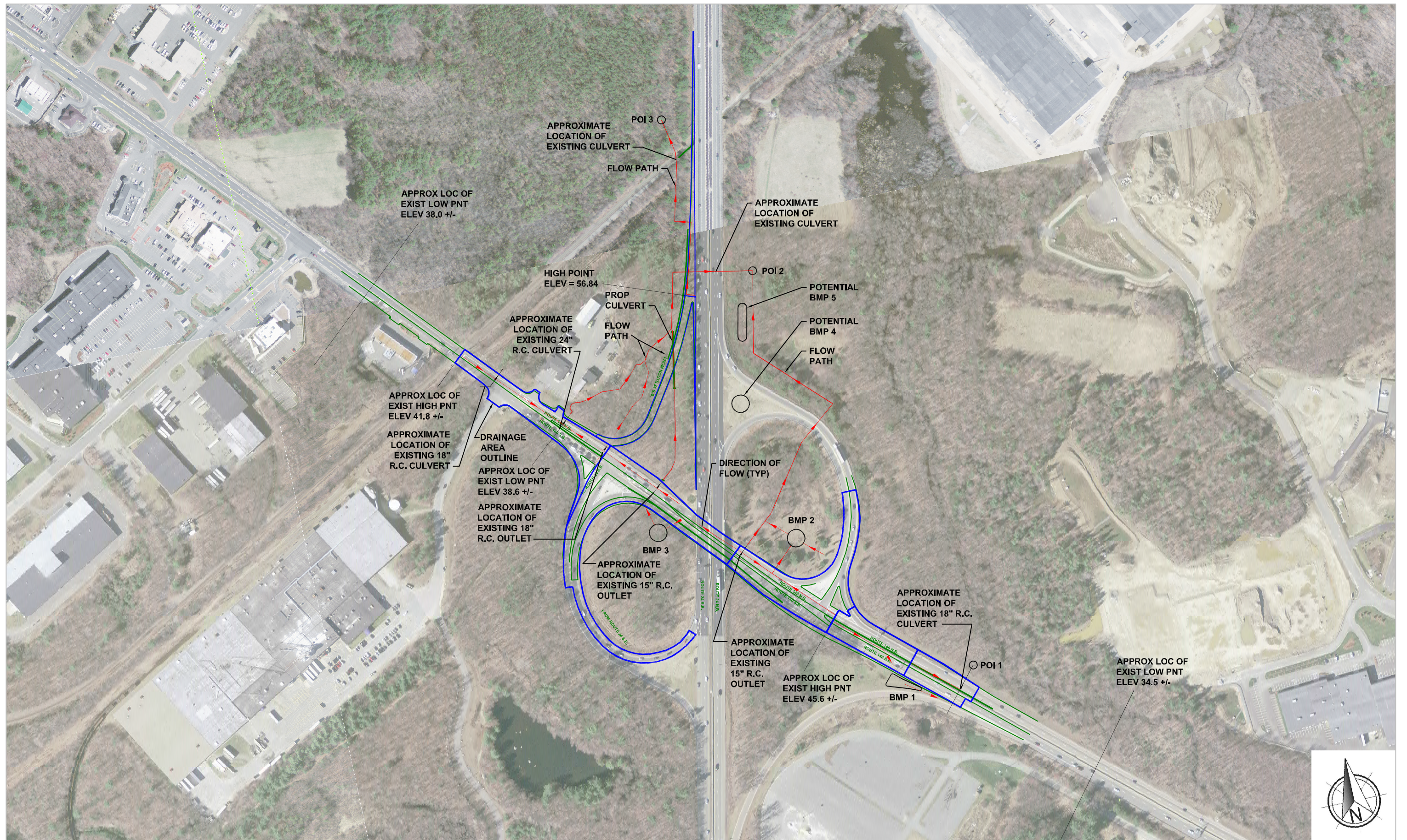


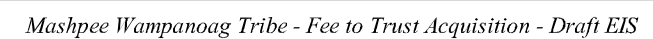
SOURCE: Epsilon Associates, Inc.

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Figure 8.3-3

Proposed Stormwater Management System at Proposed Route 140 Northbound Entrance Ramp (Option 1)





8.3.2.2 Alternative B: Reduced Intensity I

Project Site

It is anticipated that the build-out of the stormwater management system for Alternative B would closely resemble that of Alternative A. The reduction in paved area on the Project Site south of the railroad tracks related to reduced casino footprint and reduced parking would result in a scaling down of some water quantity and quality control measures for the project under Alternative B as compared to Alternative A. The measures to be taken under Alternative B would be the same as those described under Alternative A, including sump catch basins, grassed swales, sediment forebays, riprap pads, surface bioretention ponds/swales or rain gardens, and subsurface detention/retention areas or above ground extended detention wetland systems as described in **Section 8.3.2.1** and **Table 8.3-1**. As under Alternative A, the stormwater management system for Alternative B would sufficiently provide the required water quality and recharge volumes and meet or reduce peak runoff rates for the 2-, 10- and 100-year, 24 hour, Type III storm events. The stormwater management system under Alternative B would be designed to comply with the same MassDEP Standards as described in **Section 8.3.2.1**.

Off-Site Stormwater Management

Because of its reduced trip generation, Alternative B would require fewer off-site roadway improvements than Alternative A (see **Section 8.1.3.6**). The Route 24/Route 140 intersection improvements and the Route 140 Northbound Entrance Ramp, which would require stormwater improvements described above under Alternative A, would be eliminated under Alternative B. With the exception of potentially installing new catch basins or water quality units, no significant modifications are proposed to the stormwater management systems located at the roadway improvement locations identified for Alternative B.

8.3.2.3 Alternative C: Reduced Intensity II

Project Site

It is anticipated that the build-out of the stormwater management system for Alternative C would closely resemble that of Alternative A. The elimination of development of any paved area north of the railroad tracks under Alternative C would result in the removal of water quantity and quality control measures on that part of the Project Site. The measures to be taken under Alternative C south of the railroad tracks, however, would be the same as those described under Alternative A in **Section 8.3.2.1** and **Table 8.3-1**. As under Alternative A, the stormwater management system for Alternative B would sufficiently provide the required water quality and recharge volumes and meet or reduce peak runoff rates for the 2-, 10- and 100-year, 24 hour, Type III storm events. The stormwater management system under Alternative C would be designed to comply with the same MassDEP Standards as described in **Section 8.3.2.1**.

Off-Site Stormwater Management

Alternative C would involve the same off-site roadway improvements, including either Option 1 or Option 2 for Site egress and either Option 3 or Option 4 for access to Route 140 via Route 24 Southbound, proposed under Alternative A. This work would comply with the same MassDEP Stormwater Standards identified for the Project Site. A more specific description of the work is provided in **Section 8.3.2.1**. With the exception of potentially installing new catch basins or water quality units, no significant modifications are proposed to the stormwater management systems located at the other roadway improvement locations under consideration for Alternatives A or C.

8.3.2.4 Alternative D: No Action

Project Site

Under Alternative D, the BIA would not take land into trust on behalf of the Tribe and the Project Site in Taunton would presumably continue to be developed with commercial, industrial, and warehouse buildings as described in **Section 4.3.5**. As described in **Section 7.3**, existing stormwater management for the developed portions of the Project Site consists of a combination of detention basins, sediment forebays, grassed swales, deep sump hooded catch basins and infiltration systems designed to promote groundwater recharge. There are currently no stormwater management controls on the undeveloped area north of the railroad tracks. It can be assumed that developers of new commercial, industrial, warehouse, and office buildings resulting in increased impervious areas would expand and create stormwater management measures as necessary and would comply with the MassDEP Standards described in **Section 8.3.2.1**.

Off-Site Stormwater Management

Because the No Action Alternative would involve the build-out of the Project Site in compliance with its current zoning, it is unlikely that such development would induce new traffic significant enough to necessitate off-site improvements. Therefore, no off-site stormwater management would be necessary or undertaken under Alternative D.

8.3.3 CONSTRUCTION PERIOD STORMWATER MANAGEMENT

The EPA has issued a Construction General Permit (CGP) for stormwater discharges associated with construction activities under the NPDES program (re-issued on January 2010). The CGP authorizes stormwater discharges from large and small construction activities that result in a total land disturbance of equal to or greater than one acre, where those discharges enter surface waters of the United States or a municipal separate storm sewer system (MS4) leading to surface waters of the United States. A construction project that is part of a larger common plan that will ultimately disturb one or more acres of land must also comply.

Compliance with the CGP is achieved by (1) completing, certifying and submitting to EPA a Notice of Intent (NOI), (2) developing and implementing a Stormwater Pollution Prevention Plan (SWPPP), and (3) reading and complying with the requirements and standard conditions contained in the CGP.

The threshold for this permit requirement is one acre of land disturbance. Construction and construction-related activities refer to the actual earth disturbing construction activities and those activities supporting the construction project such as construction materials or equipment storage or maintenance (e.g., fill piles, borrow area, concrete truck washout, fueling), measures used to control the quality for stormwater associated with construction activity, or other industrial stormwater directly related to the construction process.

Under Alternative A, B, or C, prior to construction the Tribe will file for coverage under the NPDES Construction General Permit for Discharges from Construction Activities. A SWPPP identifying BMPs that will be implemented to prevent erosion and sedimentation will be prepared. At a minimum the SWPPP will include installation of temporary and permanent erosion and sedimentation control devices, such as silt fence, haybales, catch basin inlet protection devices, erosion control matting, dust control measures, and construction vehicle tracking pads. The SWPPP will be updated as necessary during construction and maintained throughout the period of construction.

Under Alternative D, any proponents of commercial, industrial, and warehouse space that would involve at least one acre of land disturbance on the Project Site would adhere to the same standards described above for the preparation of a SWPPP and filing for coverage under the NPDES Construction General Permit.

8.3.4 CONCLUSION

Requirements for water quality and groundwater recharge volume would be met under any of the Alternatives described above, and any proposed stormwater management system would be designed to comply with MassDEP's Standards. Stormwater management during and after construction and the use of BMPs approved by MassDEP should mitigate potential impacts to water quality by controlling stormwater runoff volume and discharge rates and by treating stormwater by removing pollutants prior to discharge to downstream surface waters. Therefore, there would be no significant impacts to water quality under any Alternative.

SECTION 8.4

GEOLOGY AND SOILS

8.4.1 INTRODUCTION

This section identifies the direct effects to geology and soils that would result from development of each Alternative described in **Section 4.3**. Effects are measured against the environmental baseline presented in **Section 7.4**. This section describes impacts to topographic resources, soils, and the geologic setting including mineral and paleontological resources.

Regardless of the selected Alternative, topography could be modified and soils could be impacted due to erosion during construction, operation, and maintenance activities. The risk of soil erosion and the possible release of silt and sediment into the watercourses is a potential impact as a result of construction activities. This impact is more likely to occur during the construction phase of the project due to the exposure of bare soil materials to precipitation events. After construction, these impacts typically diminish once the completed site has an established growth of grass and vegetation on the disturbed areas as well as implementing stormwater controls.

Control of soil erosion will occur through the use of appropriate soil erosion and sediment control techniques. A soil erosion and sediment control plan will be developed during design consistent with the NPDES General Permit for stormwater discharges associated with construction activities. Adherence to design standards, inspection and quality control during construction and periodic cleaning of soil erosion and sediment control features will minimize the potential for erosion and sedimentation.

The areas north and south of the railroad tracks on the Project Site in Taunton contain soils that are considered prime farmland and farmland of statewide importance (see **Section 7.4** for additional information). However, no active farmland is located within the Project Site nor does the project involve federal assistance that would in turn require review under the Farmland Protection Policy Act (FPPA).¹ That said, potential impacts to Prime and Important Soils for each Development Alternative on the Project Site are described in this section.

Proposed off-site roadway work, regardless of the selected Alternative, would not involve activities on prime or state-important soils.

8.4.2 ALTERNATIVE A: PROPOSED DEVELOPMENT

Alternative A refers to the proposed resort casino as it was described during the Scoping process held by the BIA in Taunton and Mashpee, and in the IGA signed by the Tribe and the City of Taunton, with slight modifications to gaming numbers and physical footprint.

¹ USDA NRCS Farmland Protection Policy Act at <http://www.nrcs.usda.gov>; Agriculture and Food Act of 1981 (Public Law 97-98) containing the Farmland Protection Policy Act subtitle I of Title XV, Section 1539-1549. The final rules and regulations were published in the Federal Register on June 17, 1994.

8.4.2.1 Topography

The topography of the Project Site is generally flat to gently sloping, involving a rise of approximately 13 feet from topographic extremes, north to south. The Cotley River exhibits some downcutting along its banks, which represent the steepest slopes within the Project Site; these areas are limited to the southwestern portion of the Project Site, and some off-site areas.

The Proposed Development will involve clearing and grading. Topographic features of the Site will be altered by earthwork; however, due to the relatively flat nature of the Site and prior grading and earthwork, the general topographic features of the Project Site will be preserved. The banks of the Cotley River and the River itself will not be impacted within the onsite Project Site as a result of Alternative A.

Under Alternative A and C, the project proposes to upgrade the existing Route 24/Route 140 intersection and potentially construct the proposed Route 140 Northbound Entrance Ramp. This work will comply with the same aforementioned MassDEP Stormwater Standards identified above for the Project Site.

The design options associated with the Route 24/Route 140 interchange improvement work proposed under Alternatives A and C are limited due to existing conditions and the nature of the proposed work (e.g., widening existing roadways and modifications to existing ramps). The general topography adjacent to the roadways includes flat surfaces and constructed filled landforms immediately adjacent to the roadway and engineered slopes. These topographic gradients may be shifted but will be generally maintained, and in specific areas impacts to wetlands will be minimized by incorporating 2:1 slopes into the design. Roadway improvements located adjacent to steep slopes and embankments would be protected during construction utilizing stormwater best management practices. Slopes would be permanently armored, and permanent stormwater closed drainage systems would be constructed to protect the steep slopes from future erosion as discussed in **Section 8.3**.

As described in **Section 4.3.6** and **Section 8.1.3.4**, this EIS provides evaluations on two access/egress options under Alternatives A and C. Option 1 involves the construction of the Route 140 Northbound Ramp from Stevens Street. The new entrance ramp would allow vehicles leaving the casino to turn right freely from O'Connell Way onto Stevens street, bypass the Stevens Street/Route 140 Northbound Entrance/Exit Ramp intersection, and flow directly onto Route 140 Northbound.

Under Option 1, general topography within the Stevens Street Interchange includes constructed filled landforms and adjacent steep slopes. The topographic gradients will be maintained. As discussed above, roadway improvements located adjacent to steep slopes and embankments would be protected during construction utilizing stormwater best management practices. Slopes would be permanently armored, and permanent stormwater closed drainage systems would be constructed to protect the steep slopes from future erosion as discussed in **Section 8.3**. Option 1 would also require crossing of the Cotley River. It is likely that crossing would involve a bridge spanning the River and its downcut banks. Strict engineering protocol would be utilized to protect the River and land immediately adjacent to the river from future erosion, as described in **Section 8.2**. As discussed above, the use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation.

If the Route 140 Northbound Ramp were not constructed, the Option 2 approach would involve improvements to Stevens Street including signalization and construction of a wider cross section. Under Option 2, the existing stormwater management systems would be upgraded and steep slopes would not be encountered during construction. Option 2 would not involve stream crossing along the Cotley River, and therefore no impacts to the River or its banks would occur.

This DEIS also examines two options for travelers on Route 24 Southbound to access Route 140 Northbound. As described in **Section 8.1.3.4**, Option 3 involves the construction of a new slip ramp from Route 24 SB to Route 140 NB, while Option 4 involves substantial improvements to the existing ramp connecting Route 24 SB and Route 140. The existing topography at the Route 24/Route 140 Interchange area consists of generally level surfaces bordered by the engineered slopes associated with Route 24 and the existing on/off ramps. With Option 3, the existing topography would be altered to include a constructed fill landform for the new ramp, associated steep fill slopes and a retaining wall. These design elements are similar to the existing on- and off-ramps in the area. Impacts to wetlands will be minimized by incorporating 1.5:1 slopes into the design, and stormwater best management practices will be incorporated into the design. Option 4 would retain the current overall configuration of the Route 24/Route 140 Interchange and would involve widening of the existing ramps and roadways to accommodate additional lanes. The existing topographic gradients would largely be maintained under this option, with some wetland impacts resulting from the lateral expansion of the existing roadway embankments and side slopes. Under all the Options described above, as a result of construction and permanent sediment and erosion control best management practices, impacts to the existing topography would be minimal and, therefore, less than significant. No mitigation would be required.

8.4.2.2 Soils

Although the Project Site has low potential for erosion based on soil type and minimal slope gradients, construction of Alternative A could cause erosion during clearing, grading, trenching, and backfilling. As discussed above, the use of appropriate soil erosion and sediment control techniques will minimize the potential for erosion and sedimentation. A soil erosion and sediment control plan will be developed during design consistent with the NPDES General Permit for stormwater discharges associated with construction activities. Proposed off-site work will also require construction and post-construction stormwater management, and although slopes vary along off-site improvement areas from nearly level to steeply sloping, stormwater best management practices will mitigate soil mobilization along steep slopes. With incorporation of the best management practices, effects from implementation of Alternative A on soils will be minimal, and no additional mitigation is required.

This Alternative will impact approximately 15.6 acres of currently undeveloped Prime Soils and approximately 7.9 acres of currently undeveloped State Important Soils; these soils represent a portion of currently constructible land within the Project Site. These soils are not currently being utilized for agriculture; therefore these soils will not be impacted by a change in *agricultural* use. Soils within off-site improvement areas are not identified as Prime or State Important Soils. Therefore, no significant impacts to prime soils or state important soils will result from implementation of Alternative A, and no mitigation is required.

8.4.2.3 Geologic Setting

There are no known or mapped mineral resources within the Project Site or the off-site roadway improvements, no economically viable aggregate rock, nor is there paleontological resources known or mapped within the subsurface environment. Generally, the Site is underlain by glacial till of varying thickness. Further, no active or relict fault lines are mapped within the general vicinity of the Project Site or the off-site roadway improvement locations. The proposed grading and landform alteration associated with Alternative A and the two off-site options will not adversely affect known or recorded mineral or paleontological resources. Project-related impacts to geologic resources under Alternative A are considered less than significant. No mitigation is required.

8.4.3 ALTERNATIVE B: REDUCED INTENSITY I

Alternative B excludes the two casino hotels and reduces casino space compared to Alternative A, thereby reducing operations and footprint.

8.4.3.1 Topography

Although the footprint of Alternative B is reduced, the general topographic configuration of the Project Site remains the same for this Alternative as Alternative A. The site is generally flat to gently sloping, with the steepest slopes located along the Cotley River.

As under Alternative A, this Alternative would involve clearing and grading. Topographic features of the Site would be altered by earthwork; however, due to the relatively flat nature of the site and prior grading and earthwork, the general topographic features of the Project Site would be preserved. The banks of the Cotley River and the River itself would not be impacted as a result of Alternative B. Because of its reduced trip generation, Alternative B would require fewer off-site roadway improvements than Alternative A (see **Section 8.1.3.6**). As a result, no new river crossing would be necessary. As discussed above, the use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation. Impacts to topography would be minimal and less than significant, and no mitigation would be required.

8.4.3.2 Soils

As under Alternative A, Alternative B would involve clearing and grading. Although the Project Site has low potential for erosion based on soil type and minimal slope gradients, construction of Alternative B could cause erosion during clearing, grading, trenching, and backfilling. As discussed above, the use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation, and a soil erosion and sediment control plan would be developed. With incorporation of the best management practices, effects from implementation of Alternative B on soils would be minimal, and no additional mitigation would be required.

This Alternative would also impact approximately 15.6 acres of currently undeveloped Prime Soils and approximately 7.9 acres of currently undeveloped State Important Soils, equivalent to the impacts of

Alternative A. These soils represent a portion of currently constructible land within the Project Site that would be impacted under both Alternative A and Alternative B. These soils are not currently being utilized for agriculture; therefore these soils would not be impacted by a change in *agricultural* use. Therefore, no significant impacts to prime soils or state important soils would result from implementation of Alternative B, and no mitigation would be required.

8.4.3.3 Geologic Setting

As under Alternative A, the proposed grading and landform alteration associated with Alternative B would not adversely affect known or recorded mineral or paleontological resources. No active or relict fault lines are mapped within the general vicinity of the Project Site. Project-related impacts to geologic resources under Alternative B would be considered less than significant, and no mitigation would be required.

8.4.4 ALTERNATIVE C: REDUCED INTENSITY II

Relative to geology and soil impacts, Alternative C would be the same as the Proposed Development in the area south of the railroad tracks that cross the Project Site, but would eliminate all impacts in the area north of the railroad tracks. The need for the construction of a railroad crossing would therefore also be eliminated.

8.4.4.1 Topography

The topography within the Project Site is generally flat, involving a rise of approximately nine feet from topographic extremes, north to south. The Cotley River exhibits some downcutting along its banks, which represents the steepest slopes within the Project Site; these areas are limited to the southwestern portion of the Project Site, and some off-site areas.

As under Alternative A, Alternative C would involve clearing and grading. It would also involve off-site traffic improvements outlined in **Section 4.3.6** and **Section 8.1.3.4**, which are described as Option 1 or Option 2 for access/egress between the Project Site and Route 140 Northbound, and Option 3 and Option 4 for travel from Route 24 Southbound to Route 140 Northbound. Topographic features of the Site would be altered by earthwork; however, due to the relatively flat nature of the Site and prior grading and earthwork, the general topographic features of the Project Site would be preserved. The banks of the Cotley River and the River itself would not be impacted within the Project Site as a result of Alternative C.

Alternative C would involve improvements to the Route 24/Route 140 Interchange and related topography work as described under Alternative A.

Alternative C would involve either Option 1 or Option 2 improvements to Route 140 Northbound access from Stevens Street and related topography work as described under Alternative A. This Alternative would also involve either Option 3 or Option 4 improvements to access to Route 140 Northbound via Route 24 Southbound and related topography work as described under Alternative A.

As a result of construction and permanent sediment and erosion control best management practices, impacts to topography would be minimal and, therefore, less than significant. No mitigation would be required.

8.4.4.2 Soils

As under Alternative A, this Alternative, including Option 1 or Option 2, would involve clearing and grading. Although the Project Site has low potential for erosion based on soil type and minimal slope gradients located on-site, construction of Alternative C could cause erosion during clearing, grading, trenching, and backfilling. As discussed above, the use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation; a soil erosion and sediment control plan would be developed. Proposed off-site work will also required construction and post-construction stormwater management, and although slopes vary along off-site improvement areas from nearly level to steeply sloping, stormwater best management practices will mitigate soil mobilization along steep slopes. With the incorporation of best management practices, effects from implementation of Alternative C on soils would be minimal, and no additional mitigation would be required.

Because this Alternative would not involve construction north of the railroad tracks, it would result in less disturbance to Prime and Important Soils when compared to the other Development Alternatives. In total, Alternative C would impact approximately 13.2 acres of Prime Soils and approximately 6.4 acres of State Important Soils. These soils are not currently being utilized for agriculture; therefore these soils would not be impacted by a change in *agricultural* use. Soils within off-site improvement areas are not identified as Prime or State Important Soils. Therefore, no significant impacts to prime soils or state important soils would result from implementation of Alternative C, and no mitigation would be required.

8.4.4.3 Geologic Setting

As under Alternative A, the proposed grading and landform alteration associated with Alternative C and its proposed off-site roadway improvements would not adversely affect known or recorded mineral or paleontological resources. No active or relict fault lines are mapped within the general vicinity of the Project Site. Project-related impacts to geologic resources under Alternative C would be considered less than significant, and no mitigation would be required.

8.4.5 ALTERNATIVE D: NO ACTION

Under the No Action Alternative, no land would be taken into federal trust for the Tribe. The Tribe would not establish an initial reservation nor develop a destination resort casino. Without land being taken into trust, it is assumed that the parcels on the Project Site in Taunton would continue to develop to their capacity as currently zoned and permitted. Commercial, industrial, and warehouse buildings are likely to be constructed as described in **Section 4.3.5**. Theoretical plans for this build-out were designed using information from the Taunton Development Corporation's original proposal for the Site, details of building permits held by current owners, and professional estimates on the ability to build out vacant lots.

8.4.5.1 Topography

The general topographic configuration of the Project Site remains the same for this Alternative D. The Site is flat to gently sloping, involving a rise of approximately 13 feet from topographic extremes, north to south with steepest slopes located along the Cotley River.

The No Action Alternative would involve the build-out of the Project Site in compliance with its current zoning. As under Alternative A, Alternative D would involve clearing and grading. Topographic features of the Site would be altered by earthwork; however, due to the relative flat nature of the Site and prior grading and earthwork, the general topographic features of the Project Site would be preserved. The Cotley River and its banks are protected by the Wetlands Protection Act; therefore it is unlikely that the River would be impacted as a result of this Alternative. It can be assumed that developers of new commercial, industrial, warehouse, and office buildings resulting in increased impervious areas would expand and create stormwater management measures as necessary and would comply with the MassDEP Standards. The use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation. As a result impacts to topography would be minimal and, therefore, less than significant.

8.4.5.2 Soils

As under Alternative A, this Alternative would involve clearing and grading. Although the Project Site has low potential for erosion based on soil type and minimal slope gradients, construction of new commercial, industrial, warehouse, and office buildings, as described in Alternative D, could cause erosion during clearing, grading, trenching, and backfilling. As discussed above, the use of appropriate soil erosion and sediment control techniques would minimize the potential for erosion and sedimentation, and a soil erosion and sediment control plan would be developed. With the incorporation of best management practices, effects from implementation of Alternative D on soils would be minimal, and no additional mitigation would be required.

Alternative D would impact approximately 13.9 acres of Prime Soils and approximately 7.0 acres of State Important Soils. These soils represent a portion of currently constructible land within the Project Site. These soils are not currently being utilized for agriculture; therefore these soils would not be impacted by a change in *agricultural* use. Therefore, no significant impacts to prime soils or state important soils would result from implementation of Alternative D, and no mitigation would be required.

8.4.5.3 Geologic Setting

As under Alternative A, the proposed grading and landform alteration associated with Alternative D would not adversely affect known or recorded mineral or paleontological resources. No active or relict fault lines are mapped within the general vicinity of the Project Site. Project-related impacts to geologic resources under Alternative D would be considered less than significant, and no mitigation would be required.

SECTION 8.5

RARE SPECIES AND WILDLIFE HABITAT

8.5.1 POTENTIAL IMPACTS TO HABITATS

8.5.1.1 Alternative A: Proposed Development

Project Site

As explained in **Section 7.5.4**, the NHESP has designated areas in the Commonwealth as BioMap Core Habitats, BioMap Critical Natural Landscapes, and Living Waters Critical Supporting Watersheds, among other categories. Alternative A (the Proposed Development) does not involve any work in areas mapped as Core Habitats,¹ Critical Natural Landscapes,² or Living Waters Critical Supporting Watersheds.³ See **Figure 8.5-1** for additional detail. The Project Site nonetheless provides suitable habitat for a variety of common wildlife species.

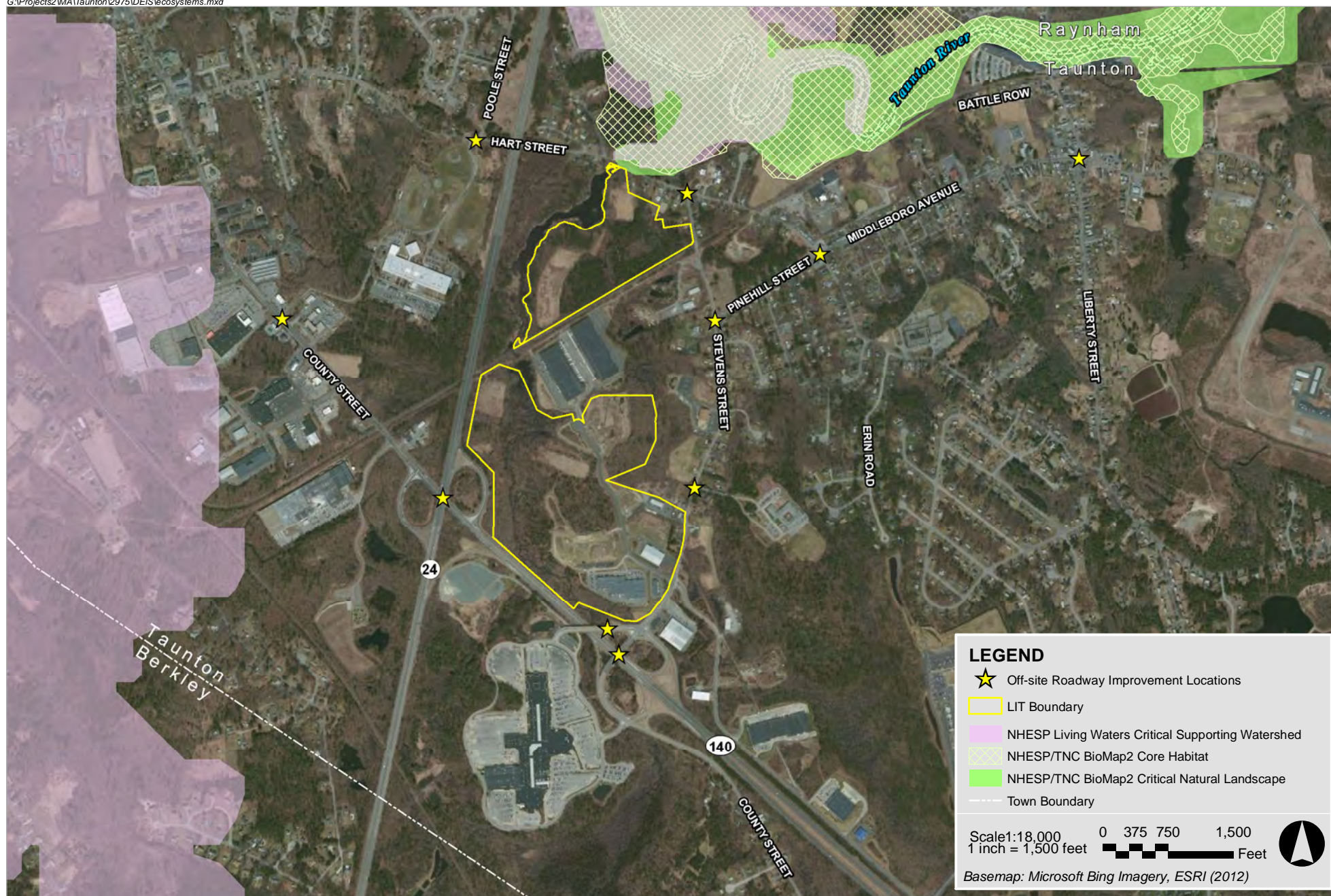
Much of the construction associated with the Proposed Development will occur in previously disturbed areas, most notably south of the railroad tracks. Even north of the tracks, a substantive portion of the impacts to existing vegetative communities will affect previously disturbed (i.e., old field, agricultural) communities. Secondary impacts to upland forest communities associated with the Cotley River would be minimal, particularly with respect to the existing extent of available upland forested habitat along the riparian corridor. Impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 have been minimized to the maximum extent practicable and existing corridors for amphibian species migrating to and from the vernal pool during the breeding season would be maintained through the preservation of contiguous upland forest located east and west of the pool. Moreover, no work would occur within 250 feet of the vernal pool boundary.

All of the proposed stream crossings would be designed to comply with the design standards referenced in the Massachusetts River and Stream Crossing Standards (revised March 1, 2011) relative to fish and wildlife passage and stream continuity. This includes replacing the existing concrete culvert that carries the Cotley River beneath the electric distribution line right-of-way access road with a new culvert that

¹ Core Habitat identifies key areas to ensure the long-term persistence of species of conservation concern, exemplary natural communities, and intact ecosystems across the Commonwealth. See Massachusetts Division of Fisheries & Wildlife (MassWildlife). BioMap2: Overview & Summary. Available at http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_methodology.htm.

² Critical Natural Landscape identifies larger landscape areas that are better able to support ecological processes, disturbances, and wide-ranging species. See Massachusetts Division of Fisheries & Wildlife (MassWildlife). BioMap2: Overview & Summary. Available at http://www.mass.gov/dfwele/dfw/nhesp/land_protection/biomap/biomap_methodology.htm.

³ Critical Supporting Watersheds are those areas with more immediate hydrologic contributions to Living Waters Core Habitats. As such, they represent the areas with the highest potential to sustain or degrade Core Habitats. See: Massachusetts Office of Geographic Information (MassGIS). November, 2003. NHESP Living Waters Critical Supporting Watersheds. Available at <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/lwscsw.html>.



complies with the Standards. This work, in conjunction with the Barstow Dam Removal Project being proposed by others, should enhance fish passage and open up previously inaccessible habitat for anadromous fish species migrating to and from the Cotley River and Taunton River located to the northeast.

Additionally, it is acknowledged that buildings, from residences to high-rise structures, cause and result in bird strikes due to the adverse effects of lighting and glass-related reflections. Most recently, the Connecticut Department of Environmental Protection cited that “Research suggests that one of the most likely causes of direct mortality to migratory songbirds in North America is collisions with glass windows.”⁴ In this regard, there are several measures that may be implemented to curtail these avian impacts. These measures include minimizing outdoor lighting levels, switching off unnecessary lighting, the use of full-cutoff luminaires, focusing light downward and the avoidance of uplighting, the avoidance of reflective surfaces beneath downlit signs, and the placement of decals or other window reflections. These and other measures will be evaluated to determine practicable means of discouraging bird strikes associated with proposed structures.

Off-Site Roadway Improvements

Alternative A involves significant roadway improvements at the intersection of Route 24 and 140 and an option for a new Route 140 Northbound Entrance Ramp off of Stevens Street (see **Section 8.1.3.4**). Impacts to vegetation and wildlife habitat in the vicinity of proposed improvements at Route 24 and 140 and the potential Route 140 Northbound Entrance Ramp would be confined to previously disturbed and developed areas proximate to existing roadways, thus resulting in negligible impacts to wildlife habitat.

Alternative A also involves an option for a new slip ramp to Route 140 northbound from Route 24 southbound (see **Section 8.1.3.4**.) This ramp would involve the disturbance of wetlands, as described in **Section 8.2**. However, this Option would not involve any work in areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds, as shown in **Figure 8.5-1**, or in any Priority or Estimated Habitat of State-Protected Rare Species, as shown in **Figure 8.5-2** below.

8.5.1.2 Alternative B: Reduced Intensity I

Project Site

The footprint of buildings under Alternative B would be slightly reduced from that under Alternative A, but this reduction would not result in measurable changes to proposed secondary impacts to upland forest communities and impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 described under Alternative A in **Section 8.5.1.1**.

⁴ Kearney-McGee, Shannon. September/October 2012. Prepare Windows and Turn Off Lights to Protect Birds. Connecticut Wildlife 32 (5), pp. 8-9.

As described in **Section 8.5.1.1**, all of the proposed stream crossings would be designed to comply with the design standards referenced in the Massachusetts River and Stream Crossing Standards (revised March 1, 2011) relative to fish and wildlife passage and stream continuity.

To discourage bird strikes to buildings, measures described above including minimizing outdoor lighting levels, switching off unnecessary lighting, and the placement of decals or other window reflections will be evaluated and incorporated into the facility design regardless of the selected Alternative. Under the Alternative B, elimination of the two 15-story casino hotels would significantly reduce potential impacts from bird strikes compared to Alternative A.

Off-Site Roadway Improvements

Because Alternative B would not involve improvements at Route 24 and 140 or the proposed Route 140 ramps (see **Section 8.1.3.6**), the negligible off-site impacts to vegetation and wildlife habitat described under Alternative A would be further reduced under Alternative B.

8.5.1.3 Alternative C: Reduced Intensity II

Project Site

Impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 would be avoided entirely under the Alternative C, in which the proposed water park and hotel would be eliminated from the north parcel of the Project Site. Otherwise impacts would be similar to those described under Alternative A in **Section 8.5.1.1**.

As described in **Section 8.5.1.1**, all of the proposed stream crossings would be designed to comply with the design standards referenced in the Massachusetts River and Stream Crossing Standards (revised March 1, 2011) relative to fish and wildlife passage and stream continuity.

To discourage bird strikes to buildings, measures described above including minimizing outdoor lighting levels, switching off unnecessary lighting, and the placement of decals or other window reflections will be evaluated and incorporated into the facility design regardless of the selected Alternative. Under the Alternative C, elimination of the proposed water park and hotel from the north parcel of the Project Site would significantly reduce potential impacts from bird strikes compared to Alternative A.

Off-Site Roadway Improvements

Alternative C would involve the same off-site roadway improvement options as Alternative A, described above. Impacts to vegetation and wildlife habitat in the vicinity of proposed improvements at Route 24 and 140 and the potential Route 140 Northbound Entrance Ramp would be confined to previously disturbed and developed areas proximate to existing roadways, thus resulting in negligible impacts to wildlife habitat. The potential slip ramp from Route 24 SB to Route 140 NB, as described under Alternative A would involve work in wetlands but not in protected habitat areas.

8.5.1.4 Alternative D: No Action

As shown in **Figure 8.5-1**, no portion of the Project Site in Taunton includes areas mapped as Core Habitats, BioMap Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds. Because Alternative D (No Action) would involve only the build-out of commercial, industrial, and warehouse space on the Project Site, none of these mapped areas would be affected.

Alternative D could result in some secondary impacts to upland forest communities associated with the Cotley River. As described in **Section 4.3.5**, Alternative D would involve development north of the railroad tracks on the Project Site, so it could impact Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7. It can be assumed that these impacts would be minimized to the maximum extent practicable.

Because the No Action Alternative would involve the build-out of the Project Site in compliance with its current zoning, it is unlikely that such development would induce new traffic significant enough to necessitate off-site improvements. Therefore, no off-site impacts to vegetation and wildlife habitat would occur under Alternative D.

Build-out of the Project Site under Alternative D would involve commercial, industrial, and warehouse buildings of no more than two stories in height. Therefore, the risk of bird strikes would be significantly lower under Alternative D compared to Alternatives A, B, or C.

8.5.2 THREATENED AND ENDANGERED PLANT AND WILDLIFE SPECIES

The project will have no adverse effects on threatened or endangered species under any of the Alternatives. According to U.S. Fish and Wildlife Service (USFWS) data, there are no known federally listed species at or proximate to the Study Area and limits of the Proposed Development or any Alternatives thereto.⁵

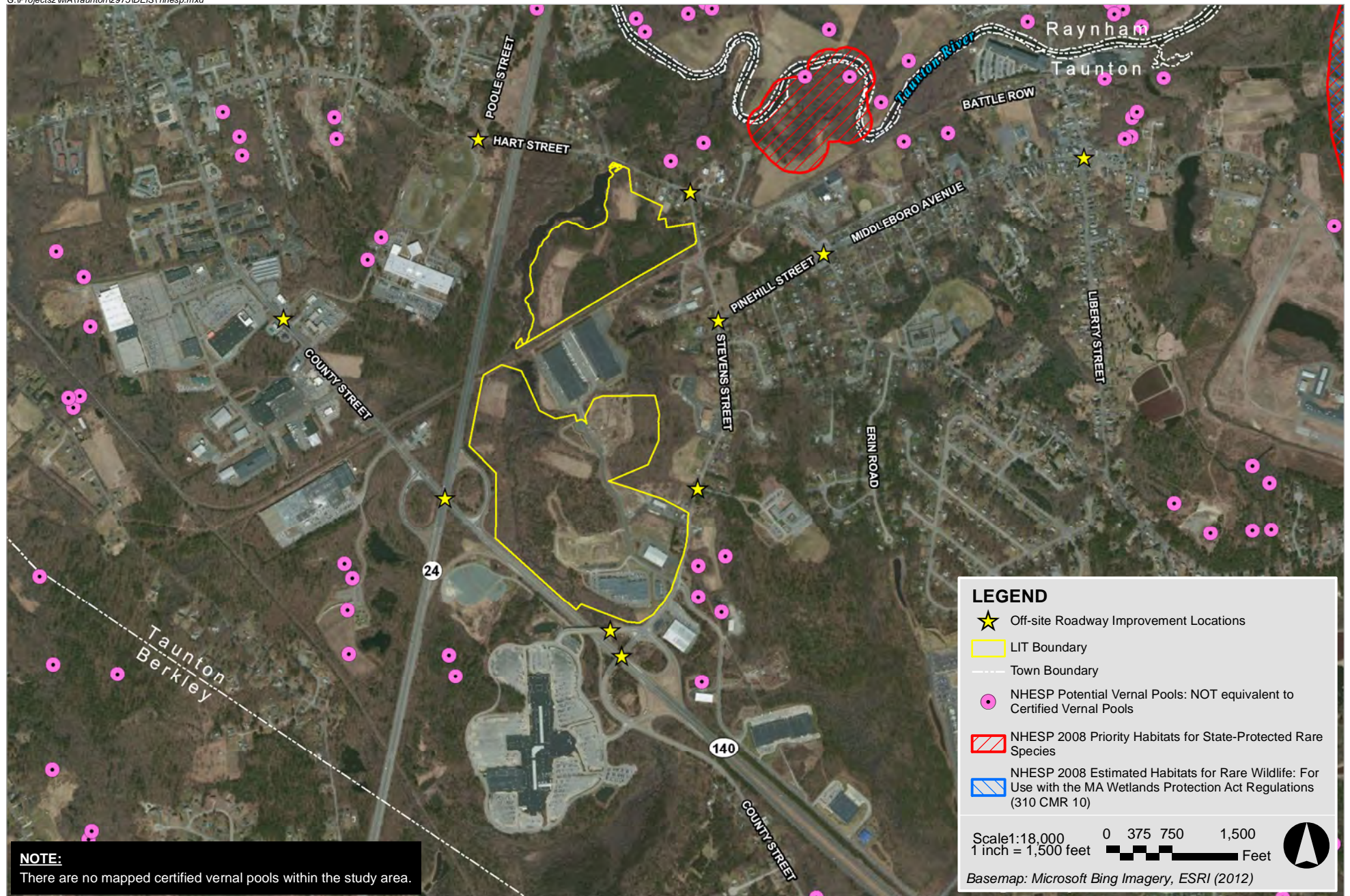
Additionally, according to the Massachusetts Natural Heritage Atlas effective October 1, 2008), prepared by the NHESP, the Study Area and Project Site do not contain any areas of Priority Habitat or Estimated Habitat for state-listed species. See **Figure 8.5-2** for additional detail.

Accordingly, no impacts to Federal or State-listed rare species will result from project implementation regardless of the selected Alternative.

⁵ U.S. Fish and Wildlife Service (USFWS). 2012. Information, Planning, and Conservation System (IPaC) Initial Project Scoping. Available at <http://ecos.fws.gov/ipac/>.

8.5.3 CONCLUSIONS

The project will have no adverse effects on state or federally-listed threatened or endangered species under any of the Alternatives. None of the Alternatives involve work in areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds. Secondary impacts to upland forest communities would be minimized under Alternatives A, B, and C. Impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 would be minimized under Alternatives A and B and avoided entirely under Alternative C. It is assumed that project proponents would take similar measures to avoid sensitive habitats under Alternative D. Therefore, there would be no significant impacts to rare species or wildlife habitat under any of the Alternatives.



SECTION 8.6

HAZARDOUS MATERIALS

This section describes the potential to encounter oil and/or hazardous materials (OHM) for each of the Alternatives.

8.6.1 ALTERNATIVE A: PROPOSED DEVELOPMENT

Based on the Hazardous Materials Review (HMR), there is the potential to encounter soil contamination associated with the 1988 gasoline release at 61 Stevens Street within the Project Site (Parcel 17 in **Figure 2.1-3**). As stated in **Section 7.6**, the case was closed by MassDEP and no additional information is available about the release. Lead paint and asbestos containing materials also may be encountered within the abandoned barn on the parcel north of the railroad. Metal debris, gas cans, 55-gallon drums, old building materials and trash present on the Project Site would need to be appropriately disposed of. Additionally, soil may be impacted along the property line with the auto salvage yard at 57 Stevens Street.

Hazardous materials used during construction would include substances such as gasoline, diesel fuel, motor oil, hydraulic fluid, solvents, cleaners, sealants, welding flux, various lubricants, paint, and paint thinner. These materials would be used for the operation and maintenance of equipment, and directly in the construction of the facilities. Fueling and oiling of construction equipment would be performed daily. The most likely possible incidents would involve the dripping of fuels, oil, and grease from construction equipment. The small quantities of fuel, oil, and grease that may drip would have relatively low toxicity and concentrations. Typical construction management practices limit and often eliminate the potential for accidental releases. An accident involving a service or refueling truck would present the worst-case scenario for the release of a hazardous substance for this project. Depending on the relative hazard of the hazardous material, if a spill of significant quantity were to occur, the accidental release could pose a hazard to both construction employees and the environment.

The Site and construction do not pose any unusual risk and the potential for release of hazardous materials during construction of Alternative A would be typical for a large, commercial development. Mitigation is included in **Section 8.6.5** to reduce potentially significant impacts resulting from hazardous materials spills or releases during construction to less-than-significant levels.

8.6.2 ALTERNATIVE B: REDUCED INTENSITY I

Because it would be built in essentially the same location, Alternative B would have the same potential to encounter OHM and the same risk of release as Alternative A.

8.6.3 ALTERNATIVE C: REDUCED INTENSITY II

Alternative C would have the same potential to encounter OHM and the same risk of release as Alternative A, except that, because it would not include any construction north of the railroad tracks, it would not have the potential to affect the buildings on the northern portion of the site that could contain lead paint and asbestos.

8.6.4 ALTERNATIVE D: NO ACTION

The No Action Alternative, because it involves the full build-out of the Project Site as an industrial park, would be expected to have the same potential to encounter OHM and the same risk of release as Alternatives A and B.

8.6.5 MITIGATION

8.6.5.1 Alternatives A, B, and C

Prior to construction of Alternative A, B, or C, the Tribe will further investigate the potential to encounter OHM on the Project Site. Should any OHM be found to be present on the Project Site, it will be remediated in full compliance with all applicable regulations. Any OHM materials removed from the Project Site will be disposed of at a facility licensed to accept the type of material being disposed.

In the event that contaminated soil and/or groundwater or other hazardous materials are encountered during construction-related earth-moving activities, all work shall be halted until a qualified individual can assess the extent of contamination. The release will be evaluated in a manner consistent with the requirements of the MassDEP and the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). If a reportable release to the environment has in fact occurred, response actions will be conducted consistent with the requirements of the MCP.

All hazardous materials necessary for the operation of the facilities shall be stored and handled according to State, Federal, and manufacturer's guidelines. All flammable liquids shall be stored in a labeled secured container, encircled within a secondary containment enclosure.

Personnel shall follow written standard operating procedures (SOP) for filling and servicing construction equipment and vehicles. The SOPs, which are designed to reduce the potential for incidents involving hazardous materials, shall include the following:

- Refueling shall be conducted only with approved pumps, hoses, and nozzles incorporating auto shut-off and shear valves.
- Catch-pans shall be placed under equipment to catch potential spills during servicing.
- All disconnected hoses shall be placed in containers to collect residual fuel from the hose.
- Vehicle engines shall be shut down during refueling.
- No smoking, open flames, or welding shall be allowed in refueling or service areas.

- Refueling shall be performed away from bodies of water to prevent contamination of water in the event of a leak or spill.
- Service trucks shall be provided with fire extinguishers and spill containment equipment, such as absorbents.
- Should a spill contaminate soil, such that remediation is required, the soil containing OHM shall be managed in accordance with the MCP and other applicable local, State, and Federal regulations.
- All containers used to store hazardous materials shall be inspected at least once per week for signs of leaking or failure. All maintenance and refueling areas shall be inspected monthly. Results of inspections shall be recorded in a logbook that shall be maintained on site.
- All temporary or permanent refueling facilities will have approved Spill Prevention, Control, and Countermeasure plans.

8.6.5.2 Alternative D

Under Alternative D, buildings could be developed concurrently or over several years by one or more developers. It can be assumed that, for each project on the site, each developer would ensure compliance with all applicable regulations, guidelines, and SOPs listed above.

SECTION 8.7

WATER SUPPLY

8.7.1 INTRODUCTION

The water supply system for the City of Taunton includes the Assawompset Pond Complex (APC), Dever Wells, water treatment facility, water distribution pipe, storage tanks and pumping stations. The existing water distribution system provides both domestic service and fire protection to the City of Taunton. The existing distribution system in the Project area is presented in **Figure 7.7-2**.

For each Alternative, water demand will be impacted by the scale of development. It is the Tribe's intent to purchase all potable water from the City of Taunton to supply the Project. The Proposed Development and Reduced Intensity Alternatives were described in **Section 4.3**. The water demand associated with each Alternative is presented in **Table 8.7-1** in gallons per day (GPD). Water saving devices such as low flow fixtures will be installed as part of the project. A summary of these systems is included in **Section 8.18**.

The total water demand for each Alternative is presented in **Table 8.7-1**. Design criteria are based on Massachusetts Department of Environmental Protection Title V - 310 CMR 15.000 regulations and professional engineering judgement. Title V stipulates water/wastewater design criteria for various types of facilities (e.g. restaurant, hotel, etc.). All design criteria used for the project are equal to or greater than Title V requirements. Water (and wastewater) volumes in **Table 8.7-1** are calculated in accordance with the following examples:

Food Court: Design criteria = 50 gallons per day (GPD) per seat
 Number of seats = 135
 Water use = 50 GPD x 135 = 6,750 GPD

Retail: Design criteria = 50 gallons per day (GPD) per thousand square feet (1000 SF)
 Area = 7,900 SF
 Area in 1000 SF = 7.9
 Water use = 50 GPD x 7.9 = 395 GPD

8.7.2 ALTERNATIVE A: PROPOSED DEVELOPMENT

Alternative A, the Proposed Development, has the largest overall water demand when compared to the other Alternatives. The total water demand is approximately 309,000 gallons per day or 0.309 MGD as presented in **Table 8.7-1**. As presented previously, the City of Taunton receives its water supply from the Assawompset Pond Complex and the Dever Well. The City's Water Management Act Permits and Registrations limit the available withdrawal from these water supplies. From 2007 through 2011 the City of Taunton withdrew an average of 6.502 MGD from the Assawompset Pond Complex. They have a withdrawal limit of 7.29 MGD from this source. This leaves 0.788 MGD of available water supply from

**TABLE 8.7-1
AVERAGE DAY DEMAND WATER USES BY ALTERNATIVE***

DESCRIPTION	DESIGN CRITERIA		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C	
	UNITS	GPD/UNIT	NO. UNITS	GPD	NO. UNITS	GPD	NO. UNITS	GPD
South of the Railroad Tracks								
Casino	positions	5	4,400	22,000	2,330	11,650	4,400	22,000
Fine Dining Restaurants	seats	35	310	10,850	0	0	310	10,850
Buffet Restaurant	seats	50	400	20,000	250	12,500	400	20,000
Food Court	seats	50	135	6,750	135	6,750	135	6,750
Feature Bar	seats	50	200	10,000	200	10,000	200	10,000
24-Hour Restaurant	seats	50	120	6,000	0	0	120	6,000
Back-of-House Employee Dining Room	1000 SF	100	101	10,100	91	9,100	101	10,100
Retail	seats	20	325	6,500	225	4,500	325	6,500
Resort Hotels	1000 SF	50	7.9	395	1.2	60	7.9	395
Pool & Spa	rooms	125	600	75,000	0	0	600	75,000
Meeting Rooms/Conf Area	Lump Sum	2,500	1	2,500	0	0	1	2,500
Lounge	seats	15	200	3,000	0	0	200	3,000
HVAC	Seats	20	180	3,600	0	0	180	3,600
	Lump Sum		83,600	83,600	60,300	60,300	68,800	68,800
Subtotal				260,295		114,860		245,495
North of the Railroad Tracks								
Water Park Hotel	rooms	125	300	37,500	300	37,500	0	0
Water Park	Lump Sum		11,000	11,000	11,000	11,000	0	0
Subtotal				48,500		48,500		0
Project Total				308,795		163,360		245,495

* Design Criteria is based on MADEP Title V - 310 CMR 15.000 of the Commonwealth of Massachusetts Regulations for the Department of Environmental Protection.

this source with an additional 0.20 MGD available from the newly installed Dever Well for a total of 0.988 MGD of available supply capacity before reaching the Water Management Act withdrawal limit. With Alternative A, about 0.679 MGD would still be available for additional growth within the City.

The City's Water Treatment Plant in Lakeville can supply 14 MGD of treated water. Over the last five years, there has been an average capacity available of 2.834 MGD at the treatment plant as shown previously in **Table 7.7-3**. With a demand of 0.309 MGD for Alternative A, the City would have 2.525 MGD of treatment capacity available.

8.7.3 ALTERNATIVE B: REDUCED INTENSITY I

Alternative B, the Reduced Intensity I option, has the least overall water demand when compared to Alternatives A and C. The total water demand is approximately 163,000 gallons per day or 0.163 MGD as presented in **Table 8.7-1**. As presented previously, the City of Taunton receives its water supply from the Assawompset Pond Complex and the Dever Well. The City's Water Management Act Permits and Registrations limit the available withdrawal from these water supplies. From 2007 through 2011 the City of Taunton withdrew an average of 6.502 MGD from the Assawompset Pond Complex. They have a withdrawal limit of 7.29 MGD from this source. This leaves 0.788 MGD of available water supply from this source with an additional 0.20 MGD available from the newly installed Dever Well for a total of 0.988 MGD of available supply capacity. With Alternative B, about 0.825 MGD would still be available for additional growth within the City.

The City's Water Treatment Plant in Lakeville can supply 14 MGD of treated water. Over the last five years, there has been an average capacity available of 2.834 MGD at the treatment plant as shown previously in **Table 7.7-3**. With a demand of 0.163 MGD for Alternative B, the City would have 2.671 MGD of treatment capacity available.

8.7.4 ALTERNATIVE C: REDUCED INTENSITY II

Alternative C, Reduced Intensity II, has less water demand than Alternative A and more water demand than Alternative B. The total water demand is approximately 245,000 gallons per day or 0.245 MGD as presented in **Table 8.7.1**. As presented previously, the City of Taunton receives its water supply from the Assawompset Pond Complex and the Dever Well. The City's Water Management Act Permits and Registrations limit the available withdrawal from these water supplies. From 2007 through 2011 the City of Taunton withdrew an average of 6.502 MGD from the Assawompset Pond Complex. They have a withdrawal limit of 7.29 MGD from this source. This leaves 0.788 MGD of available water supply from this source with an additional 0.20 MGD available from the newly installed Dever Well for a total of 0.988 MGD of available supply capacity. With Alternative C, about 0.743 MGD would still be available for additional growth within the City.

The City's Water Treatment Plant in Lakeville can supply 14 MGD of treated water. Over the last five years, there has been an average capacity available of 2.834 MGD at the treatment plant as shown previously in **Table 7.7-3**. With a demand of 0.245 MGD for Alternative C, the City would have 2.589 MGD of treatment capacity available.

8.7.5 ALTERNATIVE D: NO ACTION

The existing buildings on the Project Site use a total of 6,000 gallons per day of water¹ and occupy a total of 580,427 square feet of building space. The potential future build-out would consist of approximately 486,568 square feet of new buildings (See **Section 4.3.5**) and use an estimated additional 21,500 gallons per day of water.² The total anticipated square footage of full build-out of the No Action Alternative would be 1,066,995 square feet of building space and use a total of 29,200 gallons per day of water. The current and anticipated water use at these facilities is in **Table 8.7-2**.

Alternative D only marginally impacts the supply available under the City's Water Management Act Permits and Registrations. The City has 0.988 MGD of water available for use; this Alternative would reduce the supply by 0.029 MGD, as seen in **Table 8.7-2**. This would leave the City with 0.959 MGD for growth and other projects. The City's Water Treatment Plant in Lakeville can supply 14 MGD of treated water. Over the last five years, there has been an average capacity available of 2.834 MGD at the treatment plant as is shown in **Table 7.7-3**. Alternative D would require 0.029 MGD be treated at the water treatment plant. This would leave the City with 2.805 MGD of treatment capacity.

8.7.6 MITIGATION

8.7.6.1 Alternatives A, B, and C

Under each of the Development Alternatives, in addition to supplying potable water from the City of Taunton's water distribution system, exterior fire protection will also be provided. The City of Taunton's consultant, CDM Smith, maintains a hydraulic model of the City's water system and this hydraulic model was used to examine the impact to the City's water distribution system. A copy of CDM Smith's letter is included in **Appendix F**.

As identified in CDM Smith's letter, water system improvements are required to provide an acceptable level of fire protection to the Proposed Development. A fire flow of 3,500 gpm is the highest fire flow required to be met from a water distribution system and was the basis for CDM Smith's evaluation. For the distribution system to provide this quantity of water, some existing water mains and appurtenances will need to be upgraded in size and some new water mains will need to be added to the system within the Project Site. In addition, any place where a water main is replaced to accommodate this Project, the existing customer services will need to be connected to the new water main.

¹ Based on water bills provided by the City of Taunton for the period of October 2012 to October 2011.

² Water estimates were derived using Massachusetts State Environmental Code, Title 5. Building use was based on "office building" usage. Existing building uses range from office to warehouse to retail.

**TABLE 8.7-2
NO ACTION ALTERNATIVE WATER USES**

PROPOSED SCOPE				TITLE 5 CRITERIA		
PROPERTY ADDRESS/USE DESCRIPTION	AMOUNT	UNITS	Water Consumption GPD	DEP TITLE 5	GPD	UNITS
Existing Uses						
220 O'Connell Way (Crossroad Commerce Ctr)	330,036	SF	1531			
50 O'Connell Way (Maggiore Industrial Bldg)	97,134	SF	2365			
60 O'Connell Way (Maggiore Industrial Bldg)	100,416	SF	60			
O'Connell Way (Non-buildable Vacant Land)	0	SF	0			
Stevens Street (Non-buildable Vacant Land)	0	SF	0			
73 Stevens Street (Office/Retail, Partial Occupy)	9,253	SF	1288			
71 Stevens Street (Tardie Warehouse Bldg)	31,500	SF	88			
61R Stevens Street (Construction Business)	8,463	SF	52			
O'Connell Way Roadway Gap Parcel (Roadway)	0	SF	0			
65 Stevens Street (Residential)	1,092	SF	352			
67 Stevens Street (Residential)	1,218	SF	52			
61F Stevens Street (Residential)	1,315	SF	225			
Subtotal			6,013			
Potential Future Buildout						
11 O'Connell Way (industrial building)	51,760	SF		3,882	0.075	Square Foot
60 O'Connell Way (Maggiore Industrial Bldg)	34,500			2588	0.075	Square Foot
O'Connell Way (industrial use)	17,888	SF		1,342	0.075	Square Foot
O'Connell Way (industrial use) - Lot 9A	5,000	SF		375	0.075	Square Foot
O'Connell Way (industrial use) - Lot 9B	39,920	SF		2,994	0.075	Square Foot
O'Connell Way (industrial use) - Lot 13	74,300	SF		5,573	0.075	Square Foot
O'Connell Way (industrial use) - Lot 14	263,200	SF		6408		See Notes
Stevens Street N. of Railroad for Access	0	SF		0	0	N/A Access
Subtotal				23,161		
Project Total				29,174	Gallons/Day	

NOTES:

1. All new buildings – with the exception of Lot 14 - were based on Title V, Office Building usage at 75 GPD per 1000 SF of space.
2. Lot 14 – was based on the existing 220 O'Connell Way water usage on a proportional basis.

The proposed water system improvements include upgrading the Stevens Street water main from a 12-inch main to a 16-inch water main that would service all of the customers on the existing water main.

A tee would be installed near the main driveway to connect the existing 12-inch water main on O'Connell Way to the new 16-inch water main on Stevens Street. On Pine Hill Street, there is currently a 12-inch water main and an 8-inch water main. Both of these mains would be replaced with one 16-inch water main and would be installed in the street to service all customers.

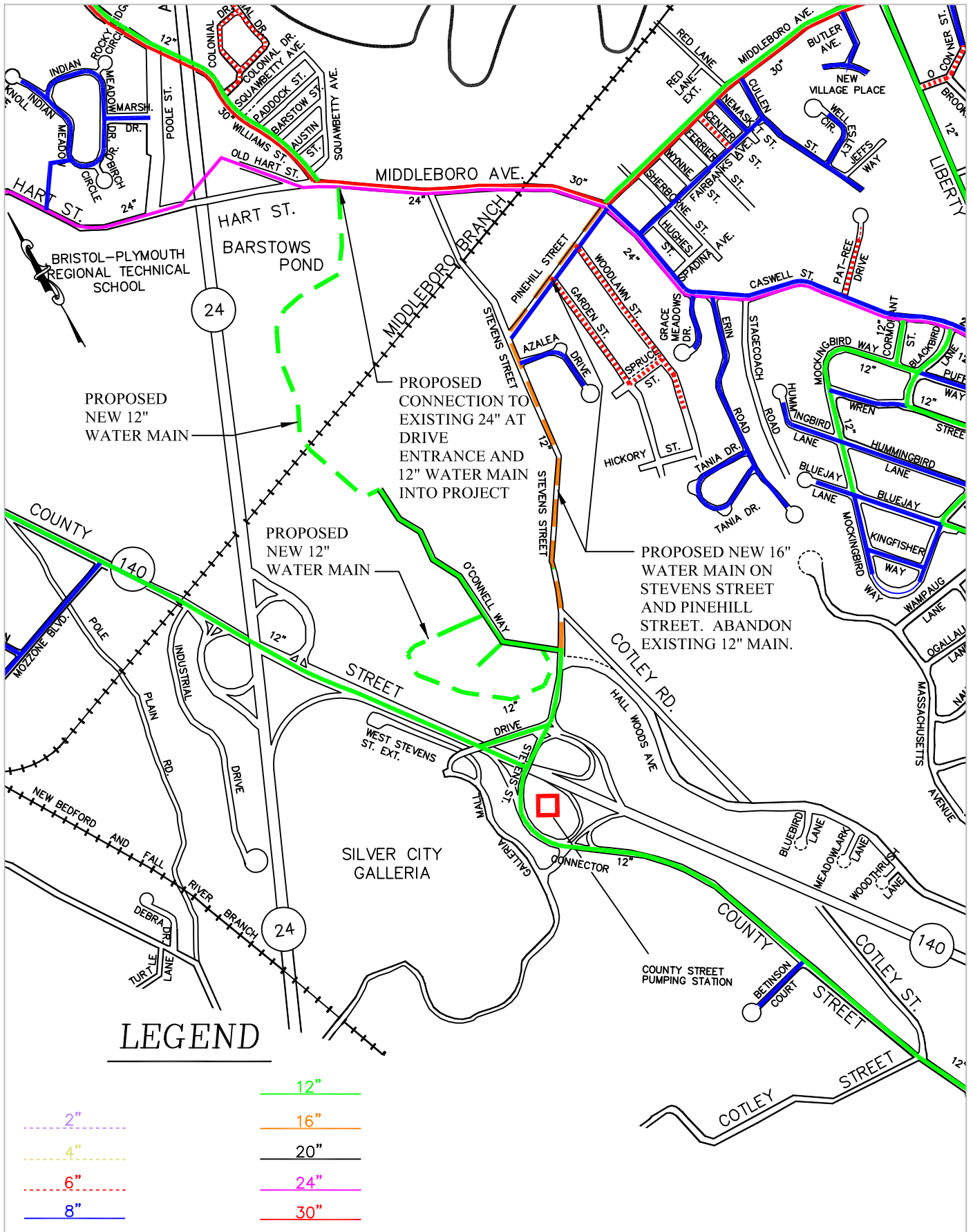
The second point of connection for the Project Site in Alternatives A and B would be at the emergency entrance on Middleboro Avenue/Hart Street. This would then provide a 12-inch water main through the Project Site, which would be connected to the existing 12-inch water main in O'Connell Way. Unlike Alternatives A and B, Alternative C would not require a second point of connection on Middleboro Ave/Hart Street.

The existing 12-inch water main in O'Connell Way would provide potable water and fire protection to the property. Hydrants, valves and other appurtenances would be installed as part of the new water main construction. Hydrants would be spaced at a maximum of 500 feet apart and as dictated by the City of Taunton Fire Chief for adequate coverage of buildings. Water services would be provided to individual buildings and would be metered at the connection point to the building.

The proposed water system changes for Alternatives A, B, and C can be seen on **Figure 8.7-1**, **Figure 8.7-2**, and **Figure 8.7-3**, respectively. Their construction processes are further described in **Section 8.19.3**. These measures would mitigate any adverse impacts of Alternatives A, B, or C on the water supply system.

8.7.6.2 Alternative D

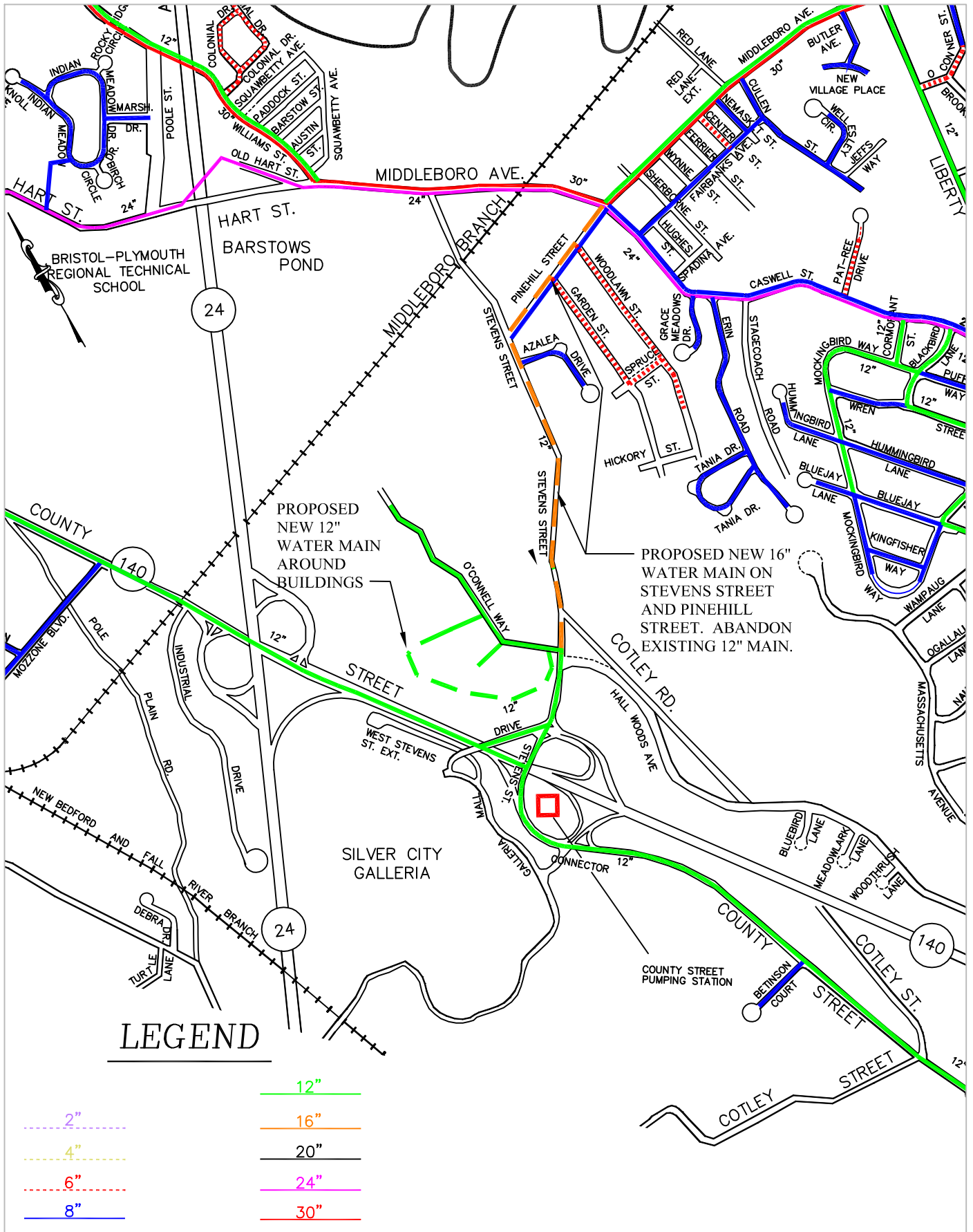
The only improvements that would be made for the No Action, full build-out of the Project Site, would be to provide water service to the new buildings off the existing 12-inch water main in O'Connell Way or off the existing water mains surrounding the Project Site. These improvements would primarily supply water service and would not improve the available fire flow capacity. They would be sufficient to mitigate any adverse impacts of Alternative D on the water supply system.



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SOURCE: City of Taunton, Water Distribution Map, August, 1996
Scale: 1" = 1200'

Figure 8.7-1
Alternative A - Proposed Project Water System Improvements



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SOURCE: City of Taunton, Water Distribution Map, August, 1996
Scale: 1" = 1200'

Figure 8.7-3
Alternative C - Reduced Intensity II Water
System Improvements

SECTION 8.8

WASTEWATER

8.8.1 INTRODUCTION

This section discusses Taunton's sewer collection system and Wastewater Treatment Facility, which has been found to have adequate capacity to receive 0.225 MGD of wastewater from Alternative A, the Proposed Development and largest scale alternative. The Tribe has committed to using Taunton's sewer infrastructure. Therefore, the use of on-site wastewater treatment has not been investigated.

Under all Alternatives, the existing O'Connell Way pumping station will continue to be operated by Veolia Water, under contract with the City of Taunton. This station is required to maintain sewer to the Crossroads Commons buildings.

Due to existing capacity constraints, no flow from the proposed Project will be discharged into the Stevens Street sewer.

The Project will minimize water usage through incorporation of low flow devices consistent with industry standards for the hospitality sector and the State of Massachusetts. Low maintenance landscaping with minimal watering requirements will be incorporated, including stormwater retention for onsite irrigation.

The total wastewater flow projection for each alternative is presented in **Table 8.8-1**. Design criteria are based on Massachusetts Department of Environmental Protection Title V - 310 CMR 15.000 regulations and the project team's experience. Title V stipulates wastewater minimum design criteria for various types of facilities (e.g. restaurant, hotel, etc.). All design criteria used for the project are equal to or greater than Title V requirements. Wastewater volumes in **Table 8.8-1** are calculated in accordance with the following examples:

Food Court: Design criteria = 50 gallons per day (GPD) per seat
 Number of seats = 135
 Water use = 50 GPD x 135 = 6,750 GPD

Retail: Design criteria = 50 gallons per day (GPD) per thousand square feet (1000 SF)
 Area = 7,900 SF
 Area in 1000 SF = 7.9
 Water use = 50 GPD x 7.9 = 395 GPD

A peaking factor of 2.4 has been adopted based on review of other casino projects.¹

¹ Fay, Spofford & Thorndike, Inc. May, 2001. Modified Facilities Plan. Montville, Connecticut Water Pollution Control Facility.

**TABLE 8.8-1
WASTEWATER PROJECTIONS**

DESCRIPTION	DESIGN CRITERIA		ALTERNATIVE A		ALTERNATIVE B		ALTERNATIVE C	
	UNITS	GPD/UNIT	NO. UNITS	GPD	NO. UNITS	GPD	NO. UNITS	GPD
South of the Railroad Tracks								
Casino	stations	5	4,400	22,000	2,330	11,650	4,400	22,000
Fine Dining Restaurant	seats	35	310	10,850	0	0	310	10,850
Buffet Restaurant	seats	50	400	20,000	250	12,500	400	20,000
Food Court	seats	50	135	6,750	135	6,750	135	6,750
Feature Bar	seats	50	200	10,000	200	10,000	200	10,000
24-Hour Restaurant	seats	50	120	6,000	0	0	120	6,000
Back-of-House	1000 SF	100	101	10,100	91	9,100	101	10,100
Employee Dinning Room	seats	20	325	6,500	225	4,500	325	6,500
Retail	1000 SF	50	7.9	395	1.2	60	7.9	395
Resort Hotel	rooms	125	300	37,500	0	0	300	37,500
Pool & Spa	Lump Sum	2,500	1	2,500	0	0	1	2,500
Meeting Rooms	seats	15	200	3,000	0	0	200	3,000
Resort Hotel	rooms	125	300	37,500	0	0	300	37,500
Lounge	seats	20	180	3,600	0	0	180	3,600
Subtotal				176,695		54,560		176,695
North of the Railroad Tracks								
Water Park Hotel	rooms	125	300	37,500	300	37,500	0	0
Water Park	Lump Sum	1	1	11,000	1	11,000	0	0
Subtotal				48,500		48,500		0
Project Total				225,195		103,060		176,695

8.8.2 ALTERNATIVE A: PROPOSED DEVELOPMENT

8.8.2.1 Impacts to Wastewater Collection System

As shown on **Figure 8.8-1**, two new dedicated sewer pumping stations will be constructed to service the Proposed Development. The majority of wastewater will flow to the Casino pumping station (PS) located in the southwest portion of the Project Site. A second pumping station will be required to service the water park and hotel north of the railroad tracks (Water Park PS).

Wastewater from the Casino PS will be pumped via a new 6-inch force main, across Route 140, and into an existing 12-inch gravity sewer. The gravity sewer is tributary to the Route 140 PS, which has a capacity of 2.3 MGD. Veolia historical flow data shows that the Route 140 PS receives an average of 0.11 MGD, with a peak of 0.76 MGD. Following an evaluation in 2007, Veolia recommended the station's 1,600 gpm pumps be replaced with smaller pumps; however, this work has not yet been done.² The force main from the Route 140 PS discharges into the 15-inch gravity sewer in Hart Road.

Flow from Water Park PS will be pumped directly into the 12-inch force main from the Red Lane PS on Middleborough Avenue, similar to other sewage pumping stations along the force main route. The 12-inch force main discharges into a 15-inch gravity sewer in Hart Road, where it converges with wastewater from the Route 140 PS en route to the WWTF.

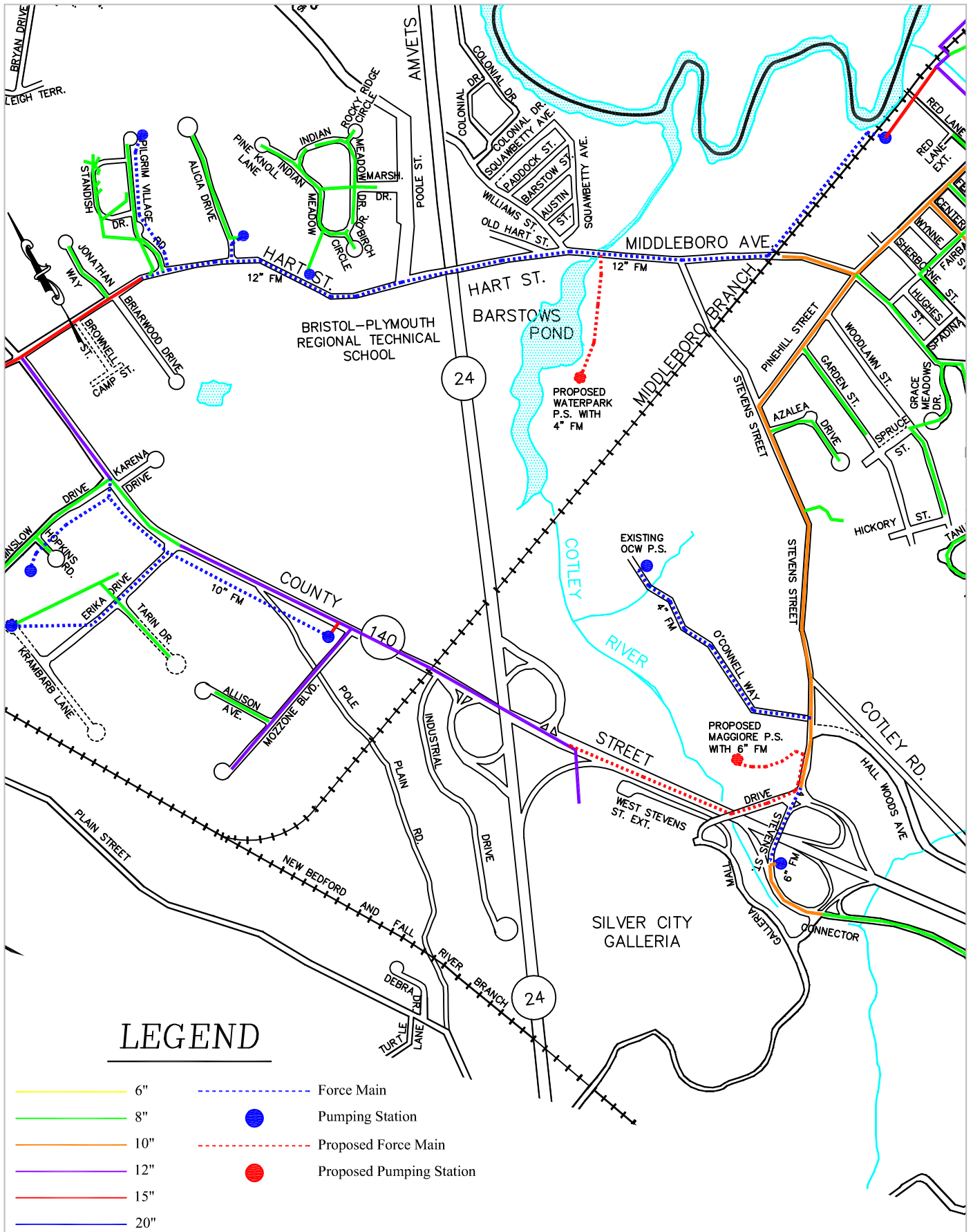
Average daily and peak hourly flows of approximately 225,000 GPD and 540,000 GPD, respectively, will be pumped into the collection system under Alternative A. The average quantity of wastewater discharged to the Route 140 PS and into the 12-inch force main from the Red Lane PS is approximately 176,500 GPD and 48,500 GPD, respectively. Gravity sewers downstream of the Route 140 PS are sized for the station's higher design flow rate and, therefore, have adequate average daily and peak hourly capacity.

8.8.2.2 Impacts of Wastewater Treatment System

The WWTF has a permitted capacity of 8.4 MGD. With a current flow of approximately 7.3 MGD, there is approximately 1.1 MGD of available capacity. The City of Taunton's Comprehensive Wastewater Management Plan includes a 1.82 MGD plant expansion to 10.22 MGD. In the CWMP, available WWTF capacity is allocated to following categories:

- Priority needs areas
- Other sewer extensions
- Infill sewers
- Inter-municipal agreements
- Planned development
- Industrial/Commercial

² Veolia Water North America – Northeast LLC. 2007. Evaluation of Five (5) Pump Stations Located in the Taunton Sanitary Sewer Collection System, City of Taunton, Massachusetts.



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SOURCE: City of Taunton, Sewer System Map, December 2007
Scale: 1" = 1200'

Figure 8.8-1
Existing Wastewater System with Proposed
Improvements in Vicinity of Project Site

The LUIP is currently sewered and, therefore, not categorized as a needs area in the CWMP. Flow from the proposed project will be allocated under the Industrial/Commercial category. Over a projected five-year period, the Proposed Development will contribute approximately 225,000 GPD of wastewater to the WWTF. The proposed flow is within the WWTF's current available capacity. The City of Taunton's Final CWMP, anticipated to be issued in 2014, will provide dedicated WWTF capacity for the Project.

8.8.2.3 Mitigation

Under the IGA, the Tribe has agreed to follow the City of Taunton's infiltration and inflow (I/I) removal program and remove five (5) gallons of I/I for every one (1) gallon of proposed wastewater. The required I/I removal is calculated by multiplying the proposed wastewater gallons by the removal ratio:

Average Daily Flow = 225,000 gal

I/I Removal Ratio = 5 : 1

Gallons Removed = 225,000 gal x 5 = 1,125,000 gal

The Tribe will remove 1.125 million gallons of peak I/I from the sewer collection system under the Proposed Development. I/I removal will be achieved through sewer system rehabilitation including cured-in-place pipe lining, pipe joint sealing and manhole sealing. Removal of this large volume of extraneous flow from the City's sewer system will greatly reduce the frequency of combined sewer overflows (CSOs). I/I removal will also create an effective increase in WWTF capacity.

The Tribe has also agreed to rehabilitate the existing Route 140 Pumping Station, including new pumps and controls. The Route 140 PS will be redesigned to include approximately 110,000 GPD of existing flow, 177,000 GPD of flow from the Proposed Development and additional capacity as determined by the City of Taunton.

8.8.3 ALTERNATIVE B: REDUCED INTENSITY I

8.8.3.1 Impacts to Wastewater Collection System

Similar to Proposed Development, two new dedicated sewer pumping stations will be constructed to service the Reduced Intensity I Alternative. However, the Casino PS will be much smaller capacity. Alternative B will pump average daily and peak hourly flows of 103,000 GPD and 247,000 GPD, respectively, into the collection system. The quantity of wastewater discharged to the Route 140 PS and into the 12-inch force main from the Red Lane PS is approximately 54,500 GPD and 48,500 GPD, respectively. Gravity sewers downstream of the Route 140 PS have adequate average daily and peak hourly capacity.

8.8.3.2 Impacts of Wastewater Treatment System

Over a projected five-year period, the Reduced Intensity I Alternative will contribute approximately 103,000 GPD of wastewater to the WWTF. The proposed flow is within the WWTF's current available capacity. The City of Taunton's Final CWMP will provide dedicated WWTF capacity for the Project.

8.8.3.3 Mitigation

The Tribe will remove 0.5 million gallons (103,000 x 5) of peak I/I from the sewer collection system under the Reduced Intensity I Alternative. Removal of extraneous flow from the City's sewer system will reduce the frequency of CSOs. I/I removal will also create an effective increase in WWTF capacity. The Route 140 PS will be rehabilitated and redesigned to include approximately 110,000 GPD of existing flow, 54,500 GPD of flow from the Project and additional capacity as determined by the City of Taunton.

8.8.4 ALTERNATIVE C: REDUCED INTENSITY II

8.8.4.1 Impacts to Wastewater Collection System

With no proposed water park, only one new dedicated sewer pumping station will be constructed to service the Reduced Intensity II Alternative. Alternative C will pump average daily and peak hourly flows of approximately 177,000 GPD and 425,000 GPD, respectively, to the Route 140 PS. Gravity sewers downstream of the Route 140 PS have adequate average daily and peak hourly capacity.

8.8.4.2 Impacts of Wastewater Treatment System

Over a projected three-year period, the Reduced Intensity II Alternative will contribute approximately 177,000 GPD of wastewater to the WWTF. The proposed flow is within the WWTF's current available capacity. The City of Taunton's Final CWMP will provide dedicated WWTF capacity for the Project.

8.8.4.3 Mitigation

The Tribe will remove 0.88 million gallons (177,000 x 5) of peak I/I from the sewer collection system under Reduced Intensity II Alternative. Removal of extraneous flow from the City's sewer system will reduce the frequency of CSOs. I/I removal will also create an effective increase in WWTF capacity. The Route 140 PS would be rehabilitated and redesigned to include approximately 110,000 GPD of existing flow, 177,000 GPD of flow from the Project and additional capacity as determined by the City of Taunton.

8.8.5 ALTERNATIVE D: NO ACTION

8.8.5.1 Impacts to Wastewater Collection System

All wastewater generated within the LUIP flows to the O'Connell Way PS and is discharged into the 10-inch gravity sewer on Stevens Street. Additional wastewater flow from full build-out of the LUIP is presumed equal to the potable water usage presented in **Table 8.7-2**, estimated at 23,200 GPD. These additional flows will be pumped into the already stressed Stevens Street sewer.

8.8.5.2 Impacts of Wastewater Treatment System

Wastewater generated from full build-out of the LUIP is estimated at 23,200 GPD.

8.8.5.3 Mitigation

As the LUIP were built out, a total of 115,000 gallons (23,000 x 5) of peak I/I would be removed from the sewer collection system. Rehabilitation of the Route 140 PS would be by the City of Taunton.

SECTION 8.9

UTILITIES

This section describes the projected electrical and gas demands for the Project Alternatives. For a full description of each Alternative, see **Section 4.3**.

8.9.1 ALTERNATIVE A: PROPOSED DEVELOPMENT

The anticipated annual electrical power requirement for the Proposed Development, with mitigation measures described in **Section 8.12.3**, is 22,428 megawatt-hours (MWh). In review of the project with the TMLP, it was determined that a new substation may be necessary to fulfill electrical demand for Alternatives A, B, and C. This would involve constructing a level, 70-foot by 70-foot area adjacent to TMLP's transmission lines that cross the Project Site. Underground conduits will connect the substation to the existing conduit system on the Site. The proposed location of this substation and conduits are shown on **Figure 8.9-1**.

Annual gas use under the Proposed Development has been estimated at approximately 122,400 MMBtu (one MMBtu is equal to 1,000,000 British thermal units). Extension of a new gas service from Middleboro Avenue would be required to provide for the water park proposed under Alternatives A and B. Columbia Gas has made a preliminary determination that the gas mains in the vicinity of the project are capable of supplying the estimated gas demand. A portion of the gas leading to the area in Route 140, however, would need to be upgraded to meet the project requirements.

The implementation of energy efficiency measures, described in **Section 8.12.3** and **Section 8.18.3**, is expected to minimize utilities use to the extent feasible.

8.9.2 ALTERNATIVE B: REDUCED INTENSITY I

The anticipated annual electrical power requirement for Alternative B is 15,561 MWh. A new substation may be necessary to fulfill electrical demands, and would be constructed as described above in **Section 8.9.1**.

Annual gas use under Alternative B has been estimated at approximately 58,300 MMBtu. Extension of gas service from Middleboro Avenue and upgrading of the gas line leading to Route 140 would be necessary as described in **Section 8.9.1**.

As described above, the implementation of energy efficiency measures is expected to minimize utilities use to the extent feasible.

8.9.3 ALTERNATIVE C: REDUCED INTENSITY II

The anticipated annual electrical power requirement for Alternative C is 20,563 MWh. A new substation may be necessary to fulfill electrical demands, and would be constructed as described above in **Section 8.9.1**.

Gas use under Alternative C has been estimated at approximately 90,200 MMBtu. Upgrading of the gas line leading to Route 140 would be necessary as described in **Section 8.9.1**.

As described above, the implementation of energy efficiency measures is expected to minimize utilities use to the extent feasible.

8.9.4 ALTERNATIVE D: NO ACTION

Alternative D would involve the gradual build-out of the Project Site into a mix primarily including commercial, industrial, warehouse, and office uses. Because the proportions of each use have not been specified, actual utility demands could vary widely from the estimates below.

The anticipated annual electrical power requirement for Alternative D would be 12,721 MWh.

Annual gas use under Alternative D would be approximately 23,600 MMBtu.

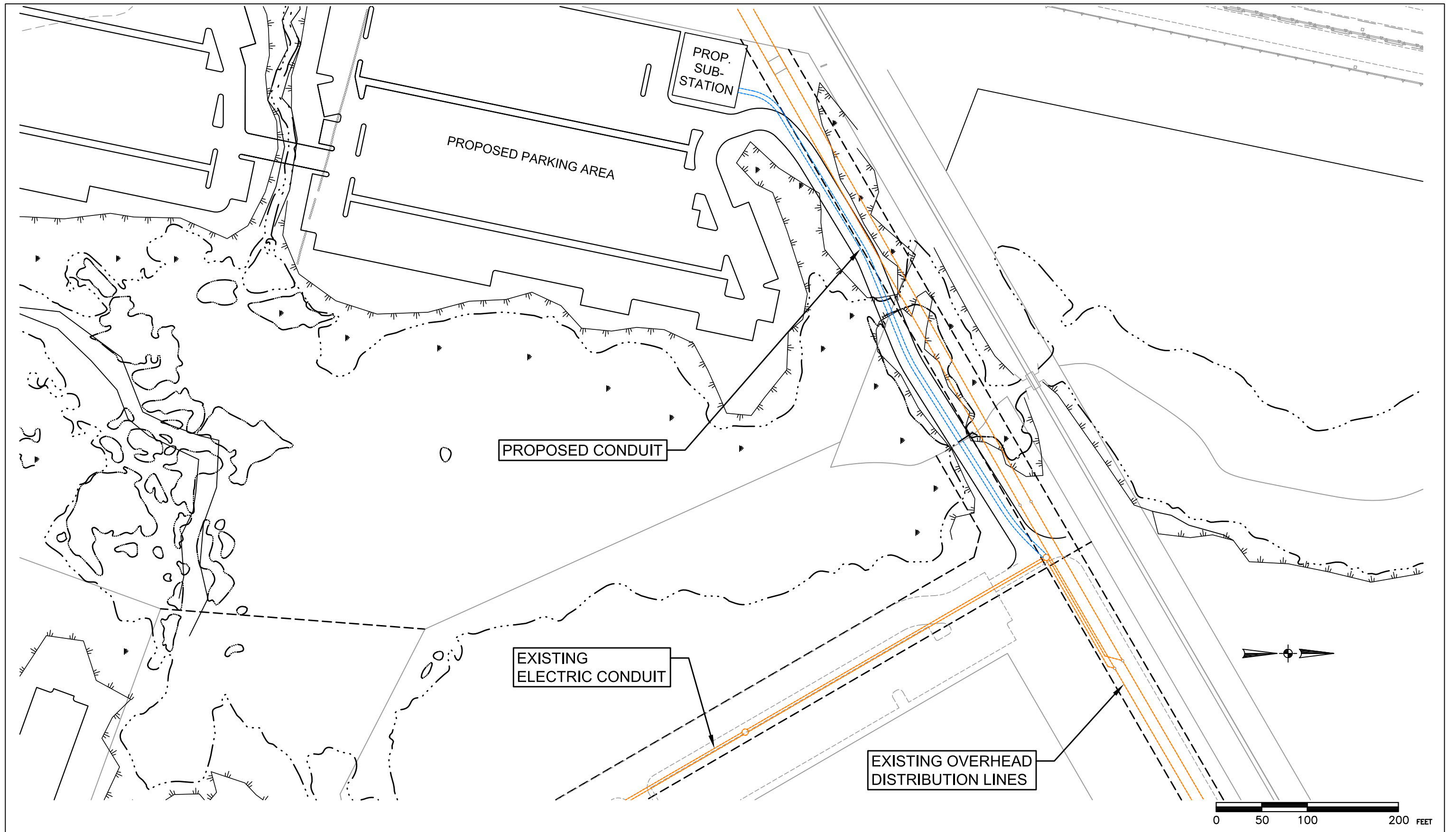
Energy efficiency measures and other efforts to minimize utility use could vary widely among proponents and building managers under Alternative D.

8.9.5 SUMMARY

The projected electrical and gas demands for each Project Alternative are listed in **Table 8.9-1** below.

**TABLE 8.9-1
PROJECTED ELECTRICAL AND GAS USE DEMANDS**

Alternative	Electrical Use (MWh/year)	Gas Use (MMBtu/year)
Alternative A: Proposed Development	22,428	122,400
Alternative B: Reduced Intensity I	15,561	58,300
Alternative C: Reduced Intensity II	20,563	90,200
Alternative D: No Action	12,721	23,600



SOURCE:

Mashpee Wampanoag Tribe - Fee to Trust Acquisition - Draft EIS

Figure 8.9-1
PROPOSED SUBSTATION EXHIBIT PLAN

SECTION 8.10

SOLID WASTE

8.10.1 SOLID WASTE GENERATED DURING DEMOLITION AND CONSTRUCTION

Demolition debris will be generated by each of the Development Alternatives. The demolition and rehabilitation of the current buildings on the Project Site that would be required under Alternative A would generate approximately 2,600 cubic yards of waste, of which approximately 1,000 cubic yards would be recycled. The majority of the current buildings have a non-recyclable exterior. Waste that cannot be recycled would be disposed of by a private company at a properly licensed facility that accepts construction/demolition materials in compliance with all applicable regulations.

Alternatives A and C would result in equivalent amounts of demolition wastes. Alternative B would maintain the current 97,000 square foot building located at 50 O'Connell Way and would therefore result in less solid waste related to demolition. The No Action Alternative would involve only the renovation of one existing building - an addition to 60 O'Connell Way; therefore, it would generate significantly less demolition waste would compared to the Development Alternatives.

All of the Alternatives will generate construction wastes. Potential solid waste streams from construction are expected to include: paper, wood, glass, aluminum, and plastics from packing materials; waste lumber; insulation; empty non-hazardous chemical containers; concrete; metal, including steel from welding/cutting operations; and electrical wiring. Under Alternative A, construction would last approximately nine months and would generate approximately 4,700 cubic yards of waste. The Tribe will implement a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed of in landfills and to pursue the goal of diverting at least 75 percent of construction-related waste from landfills. Waste that cannot be recycled would be disposed of by a private company that accepts construction/demolition materials.

Alternatives B and C each propose less new building square footage than Alternative A, and would therefore generate less waste and recycling in their construction phases. These wastes would be handled under the same contracts and processes as they would under Alternative A. The No Action Alternative would involve the construction of approximately 486,600 square feet of new building space, and would therefore generate substantial construction waste. Under Alternative D, property developers would contract the disposal of construction waste that could not be recycled to a company that accepts construction/demolition materials.

8.10.2 SOLID WASTE SERVICE

For solid waste generated by the operation of the destination resort casino and ancillary facilities under Alternatives A, B, or C, the Tribe has agreed to contract a private waste hauling service. Specifically, the IGA between the Tribe and the City of Taunton states the following:

“Section 11. Solid Waste Disposal. The Tribe shall contract with a private waste hauler for disposal of solid waste and recycled materials generated by the Project and pay all fees associated therewith, and the City shall have no obligation to provide solid waste disposal services to the Tribe.”

Therefore, no waste from the Tribe’s development would be added to the stream hauled weekly by Allied Waste Services under the City’s contract, nor would any of the casino facilities’ wastes be disposed of in the Taunton Sanitary Landfill or facilities with which the landfill is to be replaced by 2016. It is anticipated that the Tribe will contract with a private solid waste management company for solid waste and recycling collection and disposal services.

Under Alternative D: No Action, building owners of the commercial and industrial properties in and adjacent to the LUIP would presumably be required to contract with a private waste hauling service for the solid waste generated by its tenants. Therefore, this Alternative would also not place any burden to the City’s services.

8.10.3 SOLID WASTE GENERATED DURING OPERATION

8.10.3.1 Alternative A: Proposed Development

Alternative A is expected to generate solid waste typical of other destination resort casino projects. Solid waste generated by this Alternative would be approximately 2,087.4 tons per year, based on the program plans and generation rates in **Table 8.10-1** below.

**TABLE 8.10-1
SOLID WASTE GENERATION, ALTERNATIVE A**

Use	Program	Generation Rate	Solid Waste (tons per year)
Gaming Space	132,156 sf	0.0057 tons/sf/year ¹	753.3
Food & Beverage	41,165 sf	0.0055 tons/sf/year	226.4
Entertainment	23,423 sf	0.0057 tons/sf/year ¹	133.5
Retail	7,872 sf	0.0055 tons/sf/year	43.3
Other/Office ²	101,052 sf	0.0013 tons/sf/year	131.4
Hotels	900 rooms	0.73 tons/room/year	657.0
Water Park	25,000 sf	0.0057 tons/sf/year ¹	142.5
Total			2,087.4
¹ Casino gaming space, entertainment space, and water park assumed to generate waste at same rate as “Other services,” including museums, art galleries, recreational services, health clubs, and repair services (http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Service.htm). ² “Other/Office” includes office space for administrative, employee, and building services for the casino			

Solid waste will include wastepaper, cardboard, glass, bottles, and food waste. A portion of the waste will be recycled as described below. The remainder of the waste will be compacted and removed by a waste hauler contracted by the Tribe. Recyclable materials are expected to include paper, cardboard, metals, cans and bottles. With the exception of “household hazardous wastes” typical of entertainment, retail, and service uses (for example, cleaning fluids and paint), the Project will not generate hazardous waste.

All recycling, trash collection, and loading will occur on-site. Refuse bins will be provided for patrons and employees in convenient locations in the casino, restaurants, and other facilities. Patrons will not be asked to separate recyclable items; trash and recycling will be collected in a single stream for back-end sorting. Employee office space will include separate receptacles for paper recycling. All waste will be sorted by employees and temporarily held on site in building space located away from pedestrian- or patron-accessible areas. Once sorted, waste and recyclables will be kept separate. On a daily basis, the solid waste will be moved to the loading docks into yard containers for daily pick-up by a private waste management company and taken to a disposal facility with adequate capacity. A separate pick-up will occur for all recyclable materials.

The recycling system described above will minimize non-recycled solid waste to the maximum extent practicable under Alternative A. No further mitigation is required.

8.10.3.2 Alternative B: Reduced Intensity I

Solid waste generated by Alternative B would be approximately 1,286.4 tons per year, based on the program plans and generation rates in **Table 8.10-2** below.

TABLE 8.10-2
SOLID WASTE GENERATION, ALTERNATIVE B

Use	Program		Generation Rate	Solid Waste (tons per year)
Gaming Space	78,000 sf		0.0057 tons/sf/year ¹	444.6
Food & Beverage	12,000 sf		0.0055 tons/sf/year	66.0
Entertainment	NA		0.0057 tons/sf/year ¹	0
Retail	1,160 sf		0.0055 tons/sf/year	6.4
Other/Office ²	90,740sf		0.0013 tons/sf/year	118.0
Hotel	300 rooms		0.73 tons/room/year	219.0
Water Park	25,000 sf		0.0057 tons/sf/year ¹	142.5
50 O'Connell Way (Remaining)	Fitness Center	22,559 sf	0.0055 tons/sf/year	272.8
	Manufacturing/ Warehouse	50,277 sf	0.0026 tons/sf/year	
	Education	13,865 sf	0.0013 tons/sf/year	
73 Stevens Street (Remaining)	Office	8,106 sf	0.0013 tons/sf/year	10.5
61F, 65, and 67 Stevens Street (Remaining)	9 bedrooms (3 each)		0.73 tons/room/year	6.6 (City of Taunton)
Total				1,286.4

¹ Casino gaming space, entertainment space and water park assumed to generate waste at same rate as “Other services,” including museums, art galleries, recreational services, health clubs, and repair services (<http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Service.htm>).

² “Other/Office” includes office space for administrative, employee, and building services for the casino

Solid waste and recycling generated under Alternative B would be handled by the Tribe using the same policies, processes, and private contracts described under Alternative A. No casino facility solid waste would be added to the City of Taunton waste stream.

Under Alternative B, buildings at 50 O'Connell Way, 73 Stevens Street, and the three Stevens Street residences on the Project Site would remain and retain their current uses. As described in **Section 7.10**, solid wastes from the commercial and industrial tenants at 50 O'Connell Way and 73 Stevens Street

would continue to be collected by a private waste hauling company. Wastes generated by the three residential properties would continue to be collected weekly through the City of Taunton's waste hauling contract and handled at the Taunton Sanitary Landfill and an appropriate recycling facility.

The recycling system described above would minimize non-recycled solid waste to the maximum extent practicable under Alternative B. No further mitigation would be required.

8.10.3.3 Alternative C: Reduced Intensity II

Solid waste generated by Alternative C would be approximately 1,725.9 tons per year, based on the program plans and generation rates in **Table 8.10-3** below.

TABLE 8.10-3
SOLID WASTE GENERATION, ALTERNATIVE C

Use	Program	Generation Rate	Solid Waste (tons per year)
Gaming Space	132,156 sf	0.0057 tons/sf/year ¹	753.3
Food & Beverage	41,165 sf	0.0055 tons/sf/year	226.4
Entertainment	23,423 sf	0.0057 tons/sf/year ¹	133.5
Retail	7,872 sf	0.0055 tons/sf/year	43.3
Other/Office ²	101,052 sf	0.0013 tons/sf/year	131.4
Hotels	600 rooms	0.73 tons/room/year	438.0
Total			1,725.9
¹ Casino gaming space, entertainment space, and water park assumed to generate waste at same rate as "Other services," including museums, art galleries, recreational services, health clubs, and repair services (http://www.calrecycle.ca.gov/WasteChar/WasteGenRates/Service.htm). ² "Other/Office" includes office space for administrative, employee, and building services			

Solid waste and recycling generated under Alternative C would be handled by the Tribe using the same policies, processes, and private contracts described under Alternative A. No casino facility solid waste would be added to the City of Taunton waste stream.

The recycling system described above would minimize non-recycled solid waste to the maximum extent practicable under Alternative C. No further mitigation would be required.

8.10.3.4 Alternative D: No Action

Under Alternative D, operational solid waste would be generated by the tenants of the industrial and commercial facilities in and adjacent to the LUIP, as well as the three residences to remain. Full build-out of the No Action Alternative would be expected to generate approximately 1,822.3 tons of solid waste per year, based on the predicted program and generation rates in **Table 8.10-4** below. This solid waste would include the approximately 335.1 tons per year currently generated by the businesses and homes on the Project Site, as describe in **Section 7.10**.

**TABLE 8.10-4
SOLID WASTE GENERATION, ALTERNATIVE D**

Use	Program	Generation Rate	Solid Waste (tons per year)
Commercial-Industrial-Warehouse	663,400 sf	0.0026 tons/sf/year	1,724.8
Office	69,900 sf	0.0013 tons/sf/year	90.9
Residential	9 bedrooms	0.73 tons/bedroom/year	6.6
Total			1,822.3

The approximately 6.6 tons of solid waste per year generated by the residences on the Project Site would continue to be handled by the City of Taunton's hauling and disposal services. It can be assumed that owners of the office and commercial-industrial-warehouse facilities would be required to obtain contracts with private waste hauling companies. No industrial facility solid waste would be added to the City of Taunton waste stream. Individual building owners and managers would be responsible for obtaining contracts and instituting programs for recycling under Alternative D. These programs could vary widely and cannot be guaranteed to minimize non-recycled solid waste to the maximum extent practicable.

SECTION 8.11

AIR QUALITY

8.11.1 SUMMARY OF POTENTIAL IMPACTS TO AIR QUALITY

This section addresses potential project-related impacts to the air quality in the project area for the Proposed Development (Alternative A), Reduced Intensity Alternatives (B and C) and the No Action Alternative (D). In keeping with available guidance and comments received in the Scoping process, this section provides the estimated air quality impacts, and provides estimates of air quality benefits due to transportation mitigation measures.

8.11.1.1 Mesoscale

A mesoscale analysis is required to ensure that the Proposed Development will not adversely impact the existing State Implementation Plan (SIP), which tracks how the state intends to maintain compliance with the National Ambient Air Quality Standards (NAAQS) or plans for reductions in emissions to attain compliance in the future. A mesoscale analysis predicts the change in regional ozone precursor emissions (oxides of nitrogen [NO_x] and volatile organic compounds [VOC]) due to the Project. The analysis is required to ensure that a proposed project will not negatively impact the existing SIP. The SIP is created to track how the state intends to maintain compliance with NAAQS or to plan for future emissions reductions to attain compliance.

The most current mobile source emission factor model available from the EPA is MOtor Vehicle Emission Simulator (MOVES). However, the inputs to this model are highly state-specific (inspection and maintenance programs, fleet ages and mix, etc). In order to maintain consistency, MassDEP must compile, check, and provide these data before any analysis can be accurately performed with the MOVES model. MassDEP is in the process of compiling the data. In the interim, they have approved the use of the EPA's MOBILE6.2 mobile source emission factor model with their supplied inputs.¹ Thus, MOBILE6.2 is used for all mobile source emission factors in lieu of MOVES.

The mesoscale analysis uses emission factors, traffic volumes, estimates of roadway lengths and intersection idle times to estimate emissions of NO_x and VOC. All calculations are performed using Microsoft Excel. Details outlining the mesoscale modeling methodology are presented in **Appendix E**.

Given the increase in traffic related to the Proposed Development, it is not unexpected to see increases of NO_x and VOC emissions over the No Action condition. However, with mitigation, these emissions are reduced slightly compared to the unmitigated cases. Reductions of up to two percent are realized with mitigation measures including traffic signal improvements, roadway improvements, and a proposed direct ramp from the Stevens Street/O'Connell Way intersection to Route 140 northbound.

¹ Personal Communication. Vincent Tino, Epsilon Associates, Inc. and Marc Bennett, MassDEP. November 26, 2012.

8.11.1.2 Microscale

Dispersion modeling of carbon monoxide emissions from vehicular traffic at local intersections was conducted. Of the 55 intersections included in the traffic analysis, three intersections were chosen for modeling based on their Level of Service rankings and peak vehicle counts. The modeled intersections are shown in **Figure 7.11-1**. Modeling was performed using the EPA's MOBILE6.2 vehicular emission factor model and CAL3QHC intersection dispersion model. Details outlining the microscale modeling methodology are presented in **Appendix E**.

Microscale modeling was performed for the No Action and Alternative A cases. Alternative B does not affect the level of service (LOS) or significantly change the number of vehicles at the modeled intersections and is assumed that results are identical to the No Action Alternative. Alternative C is not significantly different from Alternative A in terms of trip generation, and it is assumed that their results are identical as well.

Overall, for the three modeled intersections for all cases and peak hours, modeled concentrations plus background are well below the NAAQS. Therefore, it can be concluded that there are no adverse air quality impacts resulting from anticipated traffic in the area.

8.11.1.3 Stationary Sources

All boilers, emergency generators, and/or other potential stationary sources of emissions will be evaluated later in the design process, and appropriate air quality preconstruction or post-construction permitting at the state level will be performed as required.

8.11.2 REVIEW OF ALTERNATIVES WITHOUT MITIGATION

Each Alternative identified through the CEQ draft guidance and the scoping process is discussed below:

8.11.2.1 Alternative A: Proposed Development

Mesoscale

For Alternative A, shown in **Table 8.11-1**, the 2022 Build condition shows significant increases of NO_x and VOC emissions compared to 2022 No Action conditions. Due to a significant increase in vehicular traffic, results show increases of approximately 29 percent in VOC and 63 percent in NO_x emissions.

**TABLE 8.11-1
REGIONAL MESOSCALE (INDIRECT) EMISSIONS ANALYSIS SUMMARY (ALTERNATIVE A)**

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2022 No Action	249.6	38.9	278.5	43.4
2022 Alternative A	322.5	50.3	454.8	70.9
Difference	72.8 29.2%	11.4 29.2%	176.2 63.3%	27.5 63.3%

Microscale

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These results are shown in **Table 8.11.2**.

**TABLE 8.11-2
SUMMARY OF MICROSCALE MODELING ANALYSIS (ALTERNATIVE A 2022)**

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
Hart Street & Route 140	AM	1.5	2.9	4.4	35
	PM	1.7	2.9	4.6	35
	SAT	1.8	2.9	4.7	35
Dean Street, Longmeadow Road, & the Gordon M. Owen Riverway	AM	1.9	2.9	4.8	35
	PM	2.2	2.9	5.1	35
	SAT	2.0	2.9	4.9	35
Route 44 & Orchard Street	AM	1.3	2.9	4.2	35
	PM	1.7	2.9	4.6	35
	SAT	1.5	2.9	4.4	35
8-Hour					
Hart Street & Route 140	AM	1.1	2.1	3.2	9
	PM	1.2	2.1	3.3	9
	SAT	1.3	2.1	3.4	9
Dean Street, Longmeadow Road, & the Gordon M. Owen Riverway	AM	1.3	2.1	3.4	9
	PM	1.5	2.1	3.6	9
	SAT	1.4	2.1	3.5	9

**TABLE 8.11-2
SUMMARY OF MICROSCALE MODELING ANALYSIS (ALTERNATIVE A 2022) (CONTINUED)**

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
8-Hour					
Route 44 & Orchard Street	AM	0.9	2.1	3.0	9
	PM	1.2	2.1	3.3	9
	SAT	1.1	2.1	3.2	9
Notes: <i>CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.</i>					

These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of “defined” worst case meteorology. The highest 1-hour traffic-related concentration predicted for the 2022 Alternative A in the area of the Project is 5.1 ppm (2.2 ppm for the modeled conditions plus 2.9 ppm for background) for the afternoon peak at the intersection of Dean Street, Longmeadow Road, and the Honorable Gordon M. Owen Riverway. The highest 8-hour traffic-related concentration is 3.6 ppm (1.5 ppm modeled plus 2.1 ppm background) at the same location and scenario. Both concentrations are well below the one-hour NAAQS of 35 ppm and the eight-hour NAAQS of 9 ppm.

8.11.2.2 Alternative B

Mesoscale

For Alternative B, shown in **Table 8.11-3**, the 2022 Build condition again shows significant increases of NO_x and VOC emissions compared to 2022 No Action conditions. Due to a significant increase in vehicular traffic, results show increases of approximately 26 percent in VOC and 61 percent in NO_x emissions. Due to the smaller scale of the project in Alternative B, the increases in emissions are slightly less than found in Alternative A.

**TABLE 8.11-3
REGIONAL MESOSCALE (INDIRECT) EMISSIONS ANALYSIS SUMMARY (ALTERNATIVE B)**

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NO _x (lbs/day)	NO _x (tons/yr)
2022 No Action	249.6	38.9	278.5	43.4
2022 Alternative B	314.2	49.0	447.6	69.8
Difference	64.5 25.9%	10.1 25.9%	169.1 60.7%	26.4 60.7%

Microscale

The intersections analyzed are unaffected by this reduced Alternative. Therefore, microscale results for the No Action Alternative can be assumed to be applicable to Alternative B. See **Section 8.11.2.4** for microscale results.

8.11.2.3 Alternative C

Traffic assumptions for Alternative C are the same as those used for Alternative A. The difference between the trips for Alternative A and Alternative C are only about 300 daily, and within 10 trips for each of the peak hours studied which translates to negligible differences. Therefore, mesoscale and microscale results for Alternative A can be assumed to be applicable to Alternative C.

Mesoscale

See **Section 8.11.2.1** for mesoscale results.

Microscale

See **Section 8.11.2.1** for microscale results.

8.11.2.4 No Action Alternative (Alternative D)

Mesoscale

Comparison of the NO_x and VOC emissions attributable to the 2022 No Action Alternative versus the 2012 Existing Conditions are presented in **Table 8.11.4**. The large decrease in total emissions from 2012 Existing to 2022 No Action, even with the increases in traffic vehicle miles traveled (VMT) and delay times, is attributable to anticipated improvements in vehicle engine and emissions technologies, which are expected to significantly reduce the per-vehicle emission rates.

**TABLE 8.11-4
REGIONAL MESOSCALE (INDIRECT) EMISSIONS ANALYSIS SUMMARY (NO ACTION)**

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NO _x (lbs/day)	NO _x (tons/yr)
2012 Existing	397.1	62.0	846.6	132.1
2022 No Action	249.6	38.9	278.5	43.4
Difference	-147.5 -37.1%	-23.0 -37.14%	-568.1 -67.10%	-88.6 -67.10%

Microscale

The results of the one-hour and eight-hour maximum modeled CO ground-level concentrations from CAL3QHC were added to EPA supplied background levels for comparison to the NAAQS. These results are shown in **Table 8.11.5**. These values represent the highest potential concentrations at the intersection as they are predicted during the simultaneous occurrence of “defined” worst case meteorology. The

highest 1-hour traffic-related concentration predicted for the No Action Alternative in the area of the Project is 5.1 ppm (2.2 ppm for the modeled conditions plus 2.9 ppm for background) for the afternoon peak at the intersection of Dean Street, Longmeadow Road, and the Honorable Gordon M. Owen Riverway. The highest 8-hour traffic-related concentration is 3.6 ppm (1.5 ppm modeled plus 2.1 ppm background) at the same location and scenario. Both concentrations are well below the 1-hour NAAQS of 35 ppm and the 8-hour NAAQS of 9 ppm.

**TABLE 8.11-5
SUMMARY OF MICROSCALE MODELING ANALYSIS (NO ACTION 2022)**

Intersection	Peak	CAL3QHC Modeled CO Impacts (ppm)	Monitored Background Concentration (ppm)	Total CO Impacts (ppm)	NAAQS (ppm)
1-Hour					
12. Hart Street & Route 140	AM	1.5	2.9	4.4	35
	PM	1.6	2.9	4.5	35
	SAT	1.8	2.9	4.7	35
34. Dean Street, Longmeadow Road, & the Gordon M. Owen Riverway	AM	1.9	2.9	4.8	35
	PM	2.2	2.9	5.1	35
	SAT	2.0	2.9	4.9	35
49. Route 44 & Orchard Street	AM	1.3	2.9	4.2	35
	PM	1.6	2.9	4.5	35
	SAT	1.5	2.9	4.4	35
8-Hour					
12. Hart Street & Route 140	AM	1.1	2.1	3.2	9
	PM	1.1	2.1	3.2	9
	SAT	1.3	2.1	3.4	9
34. Dean Street, Longmeadow Road, & the Gordon M. Owen Riverway	AM	1.3	2.1	3.4	9
	PM	1.5	2.1	3.6	9
	SAT	1.4	2.1	3.5	9
49. Route 44 & Orchard Street	AM	0.9	2.1	3.0	9
	PM	1.1	2.1	3.2	9
	SAT	1.1	2.1	3.2	9
Notes: CAL3QHC 8-hour impacts were conservatively obtained by multiplying 1-hour impacts by a screening factor of 0.7.					

8.11.3 REVIEW OF MITIGATED ALTERNATIVES

8.11.3.1 Mitigation Measures

The Tribe has identified and reviewed reasonable and feasible reduction and mitigation measures to address traffic congestion and the resulting increase in emissions associated with the 2022 Build scenarios of Alternatives A, B, and C. **Section 8.1** provides a description of the TDM program that will be implemented to reduce Project-related vehicle trips. The Tribe is committed to implementing infrastructure and management improvements to minimize potential impacts to the transportation system, including signal improvements at area intersections, encouraging alternative modes of travel, rideshare programs, and telecommuting. The construction of a direct ramp to Route 140 is considered under Alternatives A and C, as described in **Section 4.3.6**. These improvements were included in the 2022 Build with Mitigation scenarios for this analysis.

8.11.3.2 Mitigated Alternative A

Table 8.11-6 presents results of the mitigated versus unmitigated Alternative A conditions for 2022. Reductions (0.6 tons per year (tpy) or 1.7 percent) in VOC and (0.2 tpy or 0.4 percent) NO_x over unmitigated Alternative A are realized due to a proposed new direct ramp and proposed intersection signalization improvements. Mitigated Alternative A without a new ramp results in reductions of 0.6 tpy (or 1.6%) in VOC and 0.2 tpy (or 0.4%) NO_x over unmitigated Alternative A.

**TABLE 8.11-6
REGIONAL MESOSCALE (INDIRECT) EMISSIONS ANALYSIS SUMMARY (ALTERNATIVE A WITH
MITIGATION)**

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NO_x (lbs/day)	NO_x (tons/yr)
2022 Alternative A	322.5	50.3	454.8	70.9
2022 Mitigated Alternative A with New Route 140 NB Entrance Ramp	317.0	49.5	452.9	70.7
Difference	-5.4 -1.7%	-0.8 -1.7%	-1.9 -0.4%	-0.3 -0.4%
2022 Mitigated Alternative A without New Route 140 NB Entrance Ramp	317.6	49.5	453.2	70.7
Difference	-4.9 -1.5%	-0.8 -1.5%	-1.5 -0.3%	-0.2 -0.3%

The mitigation measures the Tribe has committed to implementing will minimize impacts to air quality under Alternative A.

8.11.3.3 Mitigated Alternative B

Alternative B is substantially smaller than Alternative A, and under this Alternative, there would be no new entrance ramp to Route 140 constructed. Table 8.11-7 presents results of the mitigated versus unmitigated Alternative B conditions for 2022. Reductions (0.2 tpy or 0.5 percent) in VOC and (0.1 tpy or 0.1 percent) NOx over unmitigated Alternative B are realized due to proposed intersection signalization improvements.

**TABLE 8.11-7
REGIONAL MESOSCALE (INDIRECT) EMISSIONS ANALYSIS SUMMARY (ALTERNATIVE B WITH MITIGATION)**

Pollutant	VOC (lbs/day)	VOC (tons/yr)	NOx (lbs/day)	NOx (tons/yr)
2022 Alternative B	314.2	49.0	447.6	69.8
2022 Mitigated Alternative B	312.5	48.7	446.9	69.7
Difference	-1.7 -0.5%	-0.3 -0.5%	-0.6 -0.1%	-0.1 -0.1%

Mitigation measures would minimize impacts to air quality under Alternative B.

8.11.3.4 Mitigated Alternative C

Mitigation assumptions for Alternative C are the same as those used for Alternative A. See **Section 8.11.3.1** for mitigation results.

8.11.3.5 Stationary Sources – All Alternatives

The Tribe expects that the majority of stationary sources within the Development Alternatives (boilers, engines, etc) would either be exempt from state air permitting requirements or be subject to the MassDEP's Environmental Results Program (ERP). However, if the Tribe opts to integrate larger sources (such as combined heat and power [CHP]), other air quality regulations may apply if total emissions exceed thresholds for other air pollution control requirements, including Massachusetts minor source preconstruction approvals (NMCPA), New Source Review (NSR), Operating Permits, and Prevention of Significant Deterioration (PSD).

Boilers

Projects typically include a number of small condensing boilers for heat and domestic hot water. Units are typically natural gas-fired and located in a penthouse mechanical area on the roofs of the buildings and exhausted through individual stacks.

The boilers will likely be within the requirements of the MassDEP's ERP since individual estimated heat inputs would be within or below the 10 to 40 million British thermal units per hour (mmBtu/hr) ERP range. If boilers are below the ERP limits of 10 mmBtu/hr, registration with MassDEP would not be required.

Emergency Generators

Emergency generators are required to provide life safety and standby emergency power to the buildings. The units are often diesel-fired and located in a mechanical area on the roofs of the buildings. The generators are required to be designed such that exhaust stacks extend at least ten feet above the individual building roof height above ground level.

Typically, generators will operate for approximately one hour each month for testing and general maintenance. The ERP regulation applies to new emergency generators greater than 37 kilowatts (kW). The regulation is similar to the boiler ERP in that new engines are subject to emission standards, recordkeeping, certification, and compliance with the MassDEP noise policy. Since the generators' maximum rating capacities are likely to be greater than the ERP limit of 37 kW, they will be subject to the new ERP program. Per the ERP, the generator owner will limit operation of the generator to less than 300 hours per year and submit a certification form to MassDEP within 60 days of installation.

Loading Dock Exhausts

Loading docks with mechanical ventilation will likely be part of the proposed buildings. Carbon monoxide monitors will be installed within enclosed areas with idling vehicles to insure that levels of CO do not exceed health standards. Monitors will be used to control abatement ventilation when necessary.

Parking Garage Exhausts

Carbon monoxide monitors will be installed within any underground levels in the parking garage to insure that levels of CO do not exceed health standards and to control abatement ventilation when necessary.

SECTION 8.12

GREENHOUSE GAS

8.12.1 INTRODUCTION

This section addresses potential project-related impacts to the climate of the U.S. for the Proposed Development (Alternative A), Reduced Intensity Alternatives (B and C) and the No Action Alternative (D). In keeping with available guidance and comments received in the Scoping process, this section provides the estimated level of GHG emissions as a reasonable proxy for assessing potential climate change impacts, and provides information on mitigation measures.

Greenhouse gases are gases that trap heat in the atmosphere. GHG emissions are often measured in carbon dioxide (CO₂) equivalent. To convert emissions of a gas into CO₂ equivalent, its emissions are multiplied by the gas's Global Warming Potential (GWP). The GWP takes into account the fact that many gases are more effective at trapping than CO₂, per unit mass. **Table 8.12-1**, below, shows the GWP for several GHGs. For example, methane traps 21 times more heat per unit mass than CO₂, so methane has a GWP of 21.

TABLE 8.12-1
GLOBAL WARMING POTENTIAL OF GREENHOUSE GAS EMISSIONS

Chemical	Global Warming Potential
Carbon Dioxide (CO ₂)	1
Methane (CH ₄)	21
Nitrous Oxide (N ₂ O)	310
Hydrofluorocarbons (HFCs)	140-11,700
Perfluorocarbons (PFCs)	6,500-9,200
Sulfur hexafluoride (SF ₆)	23,900
Source: http://www.epa.gov/climatechange/ghgemissions/gases/fgases.html , retrieved December 3, 2012	

This analysis focuses on emissions of carbon dioxide (CO₂). Although there are other GHGs, CO₂ is the predominant contributor to global warming. Per the EPA, 84 percent of U.S. anthropogenic GHG emissions are CO₂. Furthermore, CO₂ is by far the predominant GHG emitted from the types of sources related to this project, and CO₂ emissions can be calculated for these source types with readily-available data.

GHG emissions can be categorized into two groups: (1) emissions related to activities that are stationary on the site; and (2) emissions related to transportation. Activities on the Project Site can be further broken down into direct sources and indirect sources; direct sources include GHG emissions from fuel combustion, and indirect sources include GHG emissions associated with electricity and other forms of energy that are imported from off-site power plants via the regional electrical grid for use on-site.

The GHG emissions are estimated in three groups: direct GHG emissions from fuel combustion for heating/cooling; indirect GHG emissions from electricity use; and transportation-related GHG emissions from motor vehicle trips.

The Project is in the pre-schematic design phase for all buildings. Therefore, the building energy analyses represent the best estimate of building uses and systems that can be made at this time. Some parameters will undoubtedly change as design of each building develops. Similarly, traffic-related CO₂ emissions will change as design develops.

8.12.2 COMPARISON OF ALTERNATIVES

8.12.2.1 Alternative A: Proposed Development

Direct GHG Emissions

Table 8.12-2, below, provides estimates of direct GHG emissions under Alternative A.

The estimates are generated by building energy modeling using VisualDOE,¹ which is a proprietary interface to the publicly available DOE-2 building energy analysis program. The program uses a description of the building layout, constructions, operating schedules, conditioning systems (lighting, HVAC, etc.), along with weather data, to perform an hourly simulation of the building and to estimate utility (gas & electric) consumption rates.² As the Project is in the preliminary design stages, model inputs performed do not reflect final system design and are subject to change. The VisualDOE modeling was performed for a baseline case (compliance with code ASHRAE 90.1 – 2007) and a mitigated case (including proposed mitigation measures as described in **Section 8.12.3.3**).

TABLE 8.12-2
ALTERNATIVE A DIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO ₂ Emission Rate	CO ₂ Emissions
Alternative A - Baseline	therm/ 1,428,607 year	11.69 pounds/therm	8,350 short tons/year
Alternative A - Mitigated	therm/ 1,224,000 year	11.69 pounds/therm	7,154 short tons/year
Percent Improvement Over Baseline:			14%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

<http://www.epa.gov/climateleadership/documents/emission-factors.pdf>, last modified November 7, 2011

Indirect GHG Emissions

Table 8.12-3 contains estimates of the generation of indirect GHG emissions associated with the Proposed Development.

The estimates are generated by building energy modeling using VisualDOE as described above.

¹ Architectural Energy Corporation. 2010. VisualDOE 4.0. Available at <http://www.archenergy.com/products/visualdoe>. Accessed December 14, 2012.

² DOE-2. Available at <http://doe2.com/>. Accessed December 14, 2012.

TABLE 8.12-3
ALTERNATIVE A INDIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO2 Emission Rate	CO2 Emissions
Alternative A - Baseline	29,563,880 kWh/year	829 pounds/MWh	12,254 short tons/year
Proposed Development - Mitigated	22,428,270 kWh/year	829 pounds/MWh	9,297 short tons/year
Percent Improvement Over Baseline:			24%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

ISO-New England Final 2010 Emissions Report, Table 5.3: 2010 Calculated New England Average Emission Rates (lb/MWh)

Transportation GHG Emissions

Transportation GHG emissions are generated from vehicle exhaust. Emissions are calculated based on the total area-wide CO2 emissions as calculated similarly to the mesoscale analysis presented in **Section 7.11** and **Section 8.11**. Project generated CO2 emissions are extracted from the area-wide CO2 emissions using a factor based on the ratio of the site driveway traffic to the overall area-wide traffic. Calculation details are presented in **Appendix G**.

Transportation related to Alternative A would generate approximately 5,876.3 tons per year (TPY) as CO2.

8.12.2.2 Alternative B: Reduced Intensity I

Direct GHG Emissions

Table 8.12-4, below, provides estimates of direct GHG emissions under Alternative B.

The estimates were generated by building energy modeling using VisualDOE as described above.

TABLE 8.12-4
ALTERNATIVE B DIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO2 Emission Rate	CO2 Emissions
Alternative B - Baseline	671,375 therm/year	11.69 pounds/therm	3,924 short tons/year
Alternative B - Mitigated	582,979 therm/year	11.69 pounds/therm	3,408 short tons/year
Percent Improvement Over Baseline:			13%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

<http://www.epa.gov/climateleadership/documents/emission-factors.pdf>, last modified November 7, 2011

Indirect GHG Emissions

Table 8.12-5 contains estimates of the generation of indirect GHG emissions associated with the Alternative B.

The estimates were generated by building energy modeling using VisualDOE as described above.

TABLE 8.12-5
ALTERNATIVE B INDIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO2 Emission Rate	CO2 Emissions
Alternative B - Baseline	19,228,810 kWh/year	829 pounds/MWh	7,970 short tons/year
Alternative B - Mitigated	15,561,310 kWh/year	829 pounds/MWh	6,450 short tons/year
Percent Improvement Over Baseline:			19%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

ISO-New England Final 2010 Emissions Report, Table 5.3: 2010 Calculated New England Average Emission Rates (lb/MWh)

Transportation GHG Emissions

Transportation related to Alternative B would generate approximately 5,547.2 tons per year (TPY) as CO₂.

This estimate was generated based on the total area-wide CO₂ emissions as described above.

8.12.2.3 Alternative C: Reduced Intensity II

Direct GHG Emissions

Table 8.12-6, below, provides estimates of direct GHG emissions under Alternative C.

The estimates were generated by building energy modeling using VisualDOE as described above.

TABLE 8.12-6
ALTERNATIVE C DIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO2 Emission Rate	CO2 Emissions
Alternative C - Baseline	1,089,189 therm/year	11.69 pounds/therm	6,366 short tons/year
Alternative C - Mitigated	902,340 therm/year	11.69 pounds/therm	5,274 short tons/year
Percent Improvement Over Baseline:			17%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

<http://www.epa.gov/climateleadership/documents/emission-factors.pdf>, last modified November 7, 2011

Indirect GHG Emissions

Table 8.12-7 contains estimates of the generation of indirect GHG emissions associated with the Alternative C.

The estimates were generated by building energy modeling using VisualDOE as described above.

TABLE 8.12-7
ALTERNATIVE C INDIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Generation Rate	CO2 Emission Rate	CO2 Emissions
Alternative C - Baseline	27,341,450 kWh/year	829 pounds/MWh	11,333 short tons/year
Alternative C - Mitigated	20,563,490 kWh/year	829 pounds/MWh	8,524 short tons/year
Percent Improvement Over Baseline:			25%

Data sources: VisualDOE modeling results in Appendix G. Baseline is compliance with code ASHRAE 90.1 - 2007. Mitigated includes proposed mitigation measures as described in Section 8.12.3.2.

ISO-New England Final 2010 Emissions Report, Table 5.3: 2010 Calculated New England Average Emission Rates (lb/MWh)

Transportation GHG Emissions

Transportation related to Alternative C would generate approximately 4,131.3 tons per year (TPY) as CO₂.

This estimate was generated based on the total area-wide CO₂ emissions as described above.

8.12.2.4 Alternative D: No Action

Direct GHG Emissions

Table 8.12-8, below, contains estimates of the generation of direct GHG emissions by residents and commercial/industrial owners and tenants on the Project Site for Alternative D, the No Action Alternative. This analysis assumes natural gas is used.

TABLE 8.12-8
NO ACTION ALTERNATIVE DIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Program	Generation Rate	CO2 Emission Rate	CO2 Emissions
Commercial-Industrial-Warehouse	663,400 square feet	cubic feet of natural gas/square foot /year 31.8	pound CO2/cubic feet natural gas 0.12	1,267 short tons/year
Office	69,900 square feet	cubic feet of natural gas/square foot /year 31.8	pound CO2/cubic feet natural gas 0.12	134 short tons/year
Residential	3 residences	thousand cubic feet natural gas/residence/year 91.1	pound CO2/cubic feet natural gas 0.12	16 short tons/year

Data sources: US Energy Information Administration (EIA), Trends in U.S. Residential Natural Gas Consumption, June 2010, Table 1; <http://www.epa.gov/climateleadership/documents/emission-factors.pdf>, last modified November 7, 2011; 2003 EIA study of commercial buildings, per <http://www.mge.com/Images/PDF/Brochures/Business/ManagingEnergyCostsInOfficeBuildings.pdf>.

Indirect GHG Emissions

Table 8.12-9 contains estimates of the generation of indirect GHG emissions by residents and commercial/industrial owners and tenants on the Project Site for the No Action Alternative.

TABLE 8.12-9
NO ACTION ALTERNATIVE INDIRECT GHG EMISSIONS GENERATION ON PROJECT SITE

Use	Program	Generation Rate	CO2 Emission Rate	CO2 Emissions
Commercial-Industrial-Warehouse	663,400 square feet	17.3 kWh/square foot /year	829 pounds/MWh	4,757 short tons/year
Office	69,900 square feet	17.3 kWh/square foot /year	829 pounds/MWh	501 short tons/year
Residential	3 residences	11,496 kWh/residence/year	829 pounds/MWh	14 short tons/year

Data sources: US Energy Information Administration (EIA), Trends in U.S. Residential Natural Gas Consumption, June 2010, Table 1; <http://www.epa.gov/climateleadership/documents/emission-factors.pdf>, last modified November 7, 2011; 2003 EIA study of commercial buildings, per <http://www.mge.com/Images/PDF/Brochures/Business/ManagingEnergyCostsInOfficeBuildings.pdf>.

ISO-New England Final 2010 Emissions Report, Table 5.3: 2010 Calculated New England Average Emission Rates (lb/MWh)

Transportation GHG Emissions

Transportation related to Alternative D would generate approximately 228.4 tons per year (TPY) as CO₂.

This estimate was generated based on the total area-wide CO₂ emissions as described above.

8.12.2.5 Summary

Table 8.12-10, below, summarizes the estimated actual annual CO₂ emissions for the Proposed Development, Reduced Intensity Alternatives and the No Action Alternative.

**TABLE 8.12-10
COMPARISON OF PROJECTED CO₂ EMISSIONS FOR THE PROPOSED DEVELOPMENT AND ALTERNATIVE
DEVELOPMENT LAYOUTS**

Alternative	Total Projected GHG Emissions (short tons/year CO₂)	Description of Impacts
Alternative A (Proposed Development)	22,327	Alternative A includes the full build out of the casino as described in Section 4.3.1 . Projections include the mitigation measures described in Section 8.12.3.2 .
Alternative B (Reduced Intensity I)	15,405	Alternative B excludes the two casino hotels and some casino space as described in Section 4.3.2 , thereby reducing operations and footprint. The reduced operations and footprint reduces estimated annual CO ₂ emissions. Projections include the mitigation measures described in Section 8.12.3.2 .
Alternative C (Reduced Intensity II)	17,929	Alternative C would be the same as the Proposed Development in the area south of the railroad tracks that cross the Project Site, but would eliminate the proposed water park, hotel, and surface parking planned for the area north of the railroad tracks as described in Section 4.3.3 . The reduced operations and footprint reduces estimated annual CO ₂ emissions. Projections include the mitigation measures described in Section 8.12.3.2 .
Alternative D (No Action)	6,919	Under the No Action Alternative, no land would be taken into federal trust for the MWT and no casino constructed. Without land being taken into trust, it is assumed that the parcels within and adjacent to the LUIP would continue to develop to their capacity as currently zoned and permitted as described in Section 4.3.5 .

At these levels, none of the four Alternatives would generate enough GHG emissions to or significantly contribute to any substantive or measurable change in global atmospheric concentrations. For further information, see **Section 8.12.4**, Effect of the Project on Climate Change.

8.12.3 REVIEW OF MITIGATION OPPORTUNITIES

The CEQ draft guidance states that projects of this size should prepare a quantitative and qualitative assessment of GHG emissions. Following the CEQ draft guidance, this analysis provides information to:

- quantify cumulative emissions over the life of the project;
- discuss measures to reduce GHG emissions, including consideration of reasonable alternatives; and
- qualitatively discuss the link between such GHG emissions and climate change.

Specifically, this analysis takes account of all elements of the proposed casino and related facilities over their expected life, subject to reasonable limits based on feasibility and practicality. As the proposed casino and related facilities will be in operation for much longer than they will be under construction, this analysis focuses on operational impacts and opportunities to reduce those impacts. It evaluates GHG

emissions associated with energy use and mitigation opportunities and uses this as a point of comparison between reasonable alternatives. The mitigation measures discussed are permanent (will be retained through the life of the project), verifiable, and additional (are mitigation above base-case construction).

This analysis also considers applicable goals for energy conservation and alternatives for reducing energy demand or GHG emissions associated with energy production. The U.S. Department of Energy's Tribal Energy Program provides financial and technical assistance that enables tribes to evaluate and develop their renewable energy resources and reduce their energy consumption through efficiency and weatherization,³ and the EPA Office of Solid Waste and Emergency Response Tribal Programs provides guidance on "Greening Tribal Casinos."⁴

Following the CEQ draft guidance, this analysis reviews:

- enhanced energy efficiency;
- lower GHG-emitting technology; and
- renewable and alternative energy;
- planning for carbon capture and sequestration; and
- capturing or beneficially using fugitive methane emissions.

Consistent with the CEQ draft guidance, through scoping of the EIS, the BIA has determined which greenhouse gas considerations warrant emphasis. Consistent with the comments received, this analysis:

- Quantifies and discusses existing carbon/greenhouse gas footprint of Project areas and estimate of how footprint may change due to proposed development;
- Quantifies greenhouse gas emissions associated with vehicle trips to and from the Project;
- Discusses measures to avoid, minimize, and mitigate greenhouse gas emissions, including both the applicability of energy efficiency standards (such as LEED Green Building and Energy Star ratings) and specific suggestions of commenters (such as insulation, tree planting, and green roofs); and
- Describes opportunities for clean/renewable energy generation, particularly combined heat and power (CHP) and solar hot water.

8.12.3.1 Mitigation Options

Each mitigation option identified through the CEQ draft guidance and the scoping process is discussed below:

³ U.S. Department of Energy. 2012. Tribal Energy Program. Available at <http://apps1.eere.energy.gov/tribalenergy/>. Accessed December 14, 2012.

⁴ U.S. EPA. Greening Tribal Casinos. Available at <http://www.epa.gov/oswer/tribal/casino/index.html>. Accessed December 14, 2012.

Enhanced Energy Efficiency

Through building energy modeling where applicable, the effect of each potential enhanced energy efficiency step was reviewed to determine the impact on expected annual CO₂ emissions for the Proposed Development and the Reduced Intensity Alternatives. Proposed enhanced energy efficiency measures are discussed in **Section 8.12.3.2**, below.

Building energy efficiency standards are described explicitly through the EPA's Design to Achieve ENERGY STAR program,⁵ and indirectly as part of the LEED (Leadership in Energy and Environmental Design) certification program.⁶ Elements of both certification programs are incorporated into this review and into the mitigation measures proposed. LEED is addressed further in the **Section 8.18**.

Lower GHG-Emitting Technology

For the Alternatives reviewed here, the use of "lower GHG-emitting technology" would be use of energy sources with lower GHG emissions per unit of energy. All of the Alternatives use two types of energy sources: fuel combusted on-site, and electricity imported from the regional electric distribution grid.

Regarding fuel combusted on-site, the Existing Conditions, Proposed Development, Reduced Intensity Alternatives, and No Action Alternative all use pipeline natural gas. As shown in **Table 8.12-11**, below, natural gas has the lowest direct GHG emissions of any generally available fuel.

**TABLE 8.12-11
COMPARISON OF GHG EMISSIONS OF ALTERNATIVE FUELS**

GHG Emission Rates				
Fuel Type	CO ₂ Factor, pound per MMBtu	CH ₄ Factor, pound per MMBtu	N ₂ O Factor, pound per MMBtu	CO ₂ e Factor, pound per MMBtu
Bituminous Coal	0.206	2.43E-05	3.53E-06	0.208
Wood and Wood Residuals*	0.207	7.05E-05	9.26E-06	0.211
Propane Gas	0.135	4.85E-08	2.20E-07	0.135
Distillate Fuel Oil No. 2	0.165	6.61E-06	1.32E-06	0.166
Kerosene	0.166	6.61E-06	1.32E-06	0.167
Liquefied Petroleum Gases (LPG)	0.139	6.61E-06	1.32E-06	0.140
Residual Oil No. 6	0.166	6.61E-06	1.32E-06	0.167
Natural Gas	0.117	2.20E-06	2.20E-07	0.117

* direct emissions from combustion only; does not address lifecycle carbon emissions.

⁵ U.S. EPA. Design to Achieve ENERGY STAR. Available at http://www.energystar.gov/index.cfm?c=cbd_guidebook.cbd_guidebook. Accessed December 14, 2012.

⁶ U.S. Green Building Council (USGBC). LEED. Available at <https://new.usgbc.org/leed>. Accessed December 14, 2012.

Electricity imported from the regional distribution grid has GHG emissions associated with the power plants that generated the electricity. The electricity produced in New England comes from about 40 percent natural gas, 30 percent nuclear, 15 percent oil/gas mix, five percent coal, five percent hydro, and five percent other (biomass, waste-to-energy, wind, solar, etc.).⁷ The overall efficiency of the system is affected by transmission and distribution losses.

One potential opportunity to reduce GHG emissions from electricity use is to generate some of the project's electricity on-site, using a combined heat and power (CHP) system. CHP facilities utilize waste heat from electric power generation to supply thermal demands such as domestic water and building heating and, in some cases, building cooling, thus achieving higher thermal efficiencies than separate electric generation and building conditioning. This can mean that a properly designed system can have lower GHG emissions relative to the separate purchase of electricity from the grid and combustion of fuel on-site for heating.

CHP facilities have disadvantages included a high initial capital cost, and a need for steady long-term electric load so that the system can be operated efficiently. Typically, a CHP is sized to meet the lowest typical thermal demand at a facility; the facility remains connected to the electric power grid and imports electricity during peak demand periods. With the staged construction planned for the Proposed Development and the Reduced Intensity Alternatives, the on-site electric and thermal demand is expected to change significantly over several years of Project build-out. That means that a CHP designed to meet the initial demand would be undersized once full build-out is completed, and a CHP designed to meet the final demand would be oversized (and therefore possibly inoperable) until full build-out is completed. In either case, the efficiencies of a CHP would be more difficult to achieve.

The sizing problem could be addressed using modular fuel cells, which are installed incrementally for the phases of the project. Fuel cells use methane (natural gas) in an electro-chemical process operating at low temperature to generate electricity. High-grade or low-grade waste heat recovery, or both, can make these units into a CHP technology. Fuel cells have been used in limited applications for continuous power generation, but they are very expensive. Although the cost has apparently decreased considerably in recent years, it appears to remain well above \$5,000 per kilowatt (kW). Microturbines (very small CHP installations) could also be installed incrementally, but also have difficulty providing cost-effective power.

Another challenge associated with CHP is the requirement for steam piping between buildings. Those pipe trenches can have impacts on wetlands and other resources, and connecting all site structures (especially structures in the northern portion of the site) may not be feasible.

In the event that the Proposed Development or a Reduced Intensity Alternative goes forward, the use of a CHP will be carefully considered in the detailed design phase. The sizing of the plant would look at both the thermal and electrical loads and determining the system sizes when the maximum energy and GHG

⁷ ISO-New England. 2012. Energy Sources in New England. Available at http://www.iso-ne.com/nwsiis/grid_mkts/enrgy_srcs/index.html. Accessed December 8, 2012.

savings can be realized. Option that will be considered will be a design that allows the replacement of boilers with a CHP once full build-out is achieved, and the use of modular fuel cells or microturbines that are installed incrementally for the phases of the project.

Renewable Energy

There are a wide range of options for renewable on-site energy generation, with very different environmental, efficiency, and cost impacts. The feasibility of each major commercially-available technology that could be appropriate for the Proposed Development or the Reduced Intensity Alternatives is discussed here.

Ground Source Heat Pumps

Per MassDEP: “Ground source heat pump systems are a relatively new technology that uses the ambient temperature of the earth to heat and cool a structure.” The cost and effectiveness of a ground source heat pump system is very dependent on the geology of the project site, and the availability of land for the well field. If there is a requirement to drill through bedrock, the installation costs make it very hard for a ground source heat pump system to be cost-effective. Similarly, if the soils in the location selected have poor heat transfer coefficients (e.g. sandy soils), the costs and impact of the larger well field outweigh the benefits of the system. Ground source heat pump systems are not generally suitable for a large building as the necessary well field requires a significant amount of area that is unavailable. The largest past installations cited by MassDEP⁸ would serve only a small fraction of the heating and cooling needs of the Proposed Development or Reduced Intensity Alternatives.

The Tribe is not comfortable with the concept of installing the well field underneath buildings or parking garages, and believes it is not appropriate to impact wetland resources for well field installations.

Large Wind Turbines

Wind turbines greater than 100 kW are often sited in low-development-density areas where a consistent wind resource, unaffected by the built environment, maximizes the payback rate for installed equipment. Siting facilities in low-density areas minimizes wind turbulence, a major contributor to reduced performance and longevity of large-scale wind turbines. There are a number of cases around Massachusetts where larger turbines have been installed in relatively open areas without tall buildings in close proximity. However, there is no space available on the Project Site for a large wind turbine.

Also, depending on height and location, the turbine could be precluded by the proximity of the Taunton Municipal Airport. Large (> 1 MW) turbines can have blade tip heights of about 400 feet, which would exceed FAA height restrictions anywhere onsite. FAA height restrictions are shown in **Appendix G**.

⁸ MassDEP. Geothermal Integration. Available at http://www.mass.gov/dep/water/priorities/ene_geo.htm. Accessed December 9, 2012.

Small and Building-Integrated Wind Turbines

Wind turbines of less than 100 kW include small pole-mounted units and modest tower-mounted units up to about 250 feet tall. Building-integrated turbines include small turbines, generally less than 1 kW to about 5 kW, mounted on building roofs or parapets, or otherwise attached to a building.

Neither small nor building-integrated turbines are considered to be suitable for application to the buildings of this Project. The height of some of the buildings will result in a wind regime that will be highly variable and turbulent at turbine height, making it unsuitable for wind turbines.

In addition, in spite of some manufacturers' claims that certain building-integrated designs, such as vertical turbines, are less sensitive to building wake turbulence, there is insufficient commercial experience with these units for the Tribe to have sufficient confidence that all such issues are resolved. Most building-integrated turbines have been showplace installations. An article in *Environmental Building News* (May 2009) indicated that building-integrated turbines are not performing as predicted, have noise and vibration issues, and are a safety and insurance issue. Presentations at the Building Energy 2011 conference in Boston (March 2011) indicated that several types of wind turbines installed at the Museum of Science in Boston and in other southern New England locations have demonstrated similar performance issues.

Solar Photovoltaic

Solar photovoltaic (PV) panels create electricity from sunlight; they require undisturbed surface area free from shadows and space for transformers and associated equipment.

Specular Reflection: Because the Project Site is near the Taunton Municipal Airport, the installation of specular reflective surfaces (such as PV panels) must be evaluated for the potential to cause flash blindness in pilots using the airport. The Federal Aviation Administration (FAA) has published "Technical Guidance for Evaluating Selected Solar Technologies on Airports"⁹ (the FAA Guidance) which also addresses off-airport installations. The FAA Guidance describes the concern regarding flash blindness as follows:

Specular reflection reflects a more concentrated type of light and occurs when the surface in question is smooth and polished... Outside of very unusual circumstances, flash blindness can only occur from specular reflections. The exact percentage of light that is specularly reflected from PV panels is currently unknown. However, because the panels are a flat, polished surface, it is a reasonable assumption that most of the light is reflected in a specular way.

⁹ Federal Aviation Administration, Office of Airports, Office of Airport Planning and Programming, Airport Planning and Environmental Division (APP-400). November, 2010. Technical Guidance for Evaluating Selected Solar Technologies on Airports.

The FAA Guidance notes that “the FAA has broad authority for airspace review and the evaluation of any solar project that could pose a potential hazard to air navigation.” While the FAA Guidance contains a section on how to evaluate the specular reflection risk, the version of the guidance currently posted by the FAA contains this note:

NOTE: As of June 26, 2012, the FAA is reviewing Section 3.1.2 (“Reflectivity”) of the “Technical Guidance for Evaluating Selected Solar Technologies on Airports” based on new information and field experience. All users of this guidance are hereby notified that significant content in this section may be subject to change, and the FAA cautions users against relying solely on this section at this time.

Since the PV panels are designed to absorb light, the total amount of light reflected may be low enough to prevent specular reflection from being a significant risk. However, until the risk to aircraft can be evaluated and mitigated, the project design cannot incorporate the use of PV panels. The remainder of this subsection describes how PV could be evaluated if the critical issue of specular reflection risk is resolved.

PV Panel Siting: The PV panels are most cost-effectively mounted on the ground or on unused flat roof space. The Site has no extra land to commit exclusively to ground-mounted PV panels. The roof of the existing structures is not rated to take additional weight, and the required structural upgrades to allow additional roof weight would negate the value of use of the existing structures. As described elsewhere in this EIS, other roof structures are dedicated to a combination of needed mechanical equipment, patron-used space, and green roofs. These latter planted areas are expected to assist with rain water capture and reduce the initial load on the Site’s storm water system. During the schematic design phase the design team will explore the opportunities to include PV into the design wherever possible. Currently, the identified opportunity for PV installation is in the parking areas (PV canopies over the parking spaces).

PV Ready: The economic feasibility of installing PV is very dependent on available financial incentives. Those incentives may or may not be available to the Tribe. In the event the aviation risk can be resolved, the Tribe will consider two options: (1) financing the installation of PV panels, if funding is available; or (2) allowing a third party to install PV panels and purchasing the power generated (i.e., implementing a power purchase agreement). In a power purchase agreement, the Tribe would not need to pay for installation, operation, or maintenance of the solar panels, but would pay the third party for the power generated.

If the aviation risk can be resolved and the potential for PV is identified during schematic design, but the Tribe chooses not to utilize PV in the initial design, the parking areas will be designed as PV-ready; i.e., with appropriate space allocations so that PV can be retrofitted. This means the Project design will:

- Be capable of carrying the load of PV panels;
- Allow for the installation of a truss system for PV panels;
- Include appropriate spaces and conduits for future inverters, wiring and connections; and

- Allow for necessary additional circuit breakers in electrical panels.

Although the Project will be PV-ready, the parking areas will not be entirely useable for PV, since much of the space will be needed for vehicle transit lanes. Access and maintenance space around and within a PV array would also be necessary. Solar canopies would be practical only for the parking spaces themselves, and even then not for all parking spaces.

To estimate the potential GHG reduction that PV canopies might accomplish on the roof of the proposed garage, the following assumptions were used:

- An estimated 25 percent of space available for PV canopies;
- panel output of 12 watts per square foot, yielding potential capacity of approximately 120 kW (peak rated DC);
- The tilt angle value of 25 degrees, to minimize wind loading; and
- Tilt direction of 150 degrees, to account for the fact that many panels cannot be due south (180 degrees) and still be sited over parking spaces.

The National Energy Research Laboratory's PV Watts model was used to determine annual output of such a system based on the meteorological characteristics of a site in Taunton. The PV Watts Viewer siting figure and model output table is included in **Appendix G. Table 8.12-12** summarizes the model output for available area in the Preferred Alternative and the Reduced Intensity Alternatives.

**TABLE 8.12-12
POTENTIAL FOR PV ENERGY PRODUCTION AND GHG OFFSET**

Use	Available Area Acres	Modeled Electric Output Megawatt Hours/Year	Avoided CO2 Emissions (short tons/year)
Alternative A (Proposed Development)	21.8	3354	1,390
Alternative B (Reduced Intensity I)	19.5	3000	1,243
Alternative C (Reduced Intensity II)	17.9	2754	1,142

Data sources: Attached PVWatts model runs
ISO-New England Final 2010 Emissions Report, Table 5.3: 2010 Calculated New England Average Emission Rates (lb/MWh)

Solar Hot Water

Solar hot water (SHW) systems use solar energy to provide heating for domestic and/or process hot water. SHW systems may be applicable where there is a significant diurnal and year-round hot water demand. Such a demand is made by hotels (in the event that the hotel has on-site laundry), and water parks, but not casinos or event spaces. SHW systems require surface area near the heating need, as well as additional water storage and pumping systems.

Available land constraints are similar for SHW system as for solar PV systems. As design progresses, the Tribe will review options for roof-mounted solar hot water at the water park.

Biomass Combustion

The boilers supplying steam and hot water could be fired using biomass rather than conventional fuel. However, the use of conventional biomass sources (such as wood and wood waste) would add system complexity, maintenance requirements, fuel trucking requirements, and fuel supply uncertainty, while providing environmental benefits that are open to some debate. The use of non-conventional biomass sources (such as municipal solid waste and construction & demolition wood waste) is not appropriate for this Project.

Purchase of Green Energy

Green Energy is a term used to describe electricity generated from renewable resources such as wind and PV. Most utilities offer customers the opportunity to purchase Green Energy for some or all of the customer's needs; rates vary with utility and the class of customer. While opportunities exist for the Tribe to purchase renewable power or GHG offsets, such purchases do not materially affect the layout or operation of the Proposed Development or Alternatives. The Tribe has reviewed energy efficiency measures in consultation with the local utilities, and will also review options to purchase renewable energy from the local utilities.

Planning for Carbon Capture and Sequestration

Carbon capture and sequestration most commonly refers to the removal of CO₂ from the exhaust gas of a combustion source, and taking steps to ensure that the CO₂ does not re-enter the atmosphere. Current carbon capture technology research focuses on larger, more concentrated carbon dioxide streams (such as those found at base-loaded coal-fired power plants). No technology has progressed sufficiently that specific plans could be made for future onsite use in the Proposed Development or Reduced Intensity Alternative cases; it is not clear what space or resources such a future system would need. The only feasible step to plan for the maturation of carbon capture/sequestration technology would be to avoid on-site generation of electricity (because carbon capture/sequestration is likely to be available first to off-site base-loaded power plants).

Capturing or Beneficially Using Fugitive Methane Emissions

Methane can be generated from the decomposition of food waste in landfills. The Commonwealth of Massachusetts has a coordinated effort to encourage anaerobic digestion and related organics-to-energy processes.¹⁰ The food waste generated in the Proposed Development and Reduced Intensity Alternative cases could serve as a feedstock for such a system. However, the amount produced on-site is deemed to be insufficient for an economic on-site system. Systems will be in place to separate food waste in order to transfer such waste to an off-site regional anaerobic digestion facility in the event that such a regional facility is developed.

¹⁰ MassDEP. Anaerobic Digestion. Available at <http://www.mass.gov/dep/energy/cerpanaerobicdigestion.htm>. Accessed December 9, 2012.

8.12.3.2 Proposed Mitigation Measures

The Proposed Development and Reduced Intensity Alternative cases include the following proposed GHG mitigation measures:

- Condenser Heat Recovery
- High Efficiency Water Cooled Chillers
- Air And Water Side Economizers
- Variable Air Volume Systems
- Variable Speed Pumping
- Variable Speed Cooling Tower Fans
- Demand Controlled Kitchen Exhaust
- Increased Air Filtration
- High Performance Building Envelope
- Green Roof
- Reflective Roofs
- Exterior Shading Devices (where possible)
- Premium Electric Motors
- Energy Recovery Ventilation (on all higher % outside air units)
- Demand Controlled Ventilation
- Room Occupancy Sensors For Lighting (and HVAC in future hotel rooms)
- Daylighting (where possible)
- Reduced Lighting Power Density (below ASHRAE guidelines)
- High Performance Lighting
- Low Flow Fixtures
- Energy Star Appliances
- Rainwater Harvesting (To Be Used For Irrigation)
- Energy Management System
- Enhanced Commissioning
- Enhanced Refrigerant Management

Some of these are explicitly included in the building energy modeling summarized in **Appendix G**; other measures will be incorporated but are not specifically accounted for in the GHG emissions estimates. The traffic mitigation measures described in **Section 8.11.3** serve to reduce GHG emissions from transportation. Key mitigation measures for stationary activities onsite are described in more detail below.

Minimizing the energy intensity of the buildings is an important component of the design process. The Tribe is committed to developing an energy-efficient project consistent with economics and the end uses of the space. Two prominent factors in controlling building energy use are a building shell that minimizes the energy required to maintain the desired interior conditions and a HVAC system comprised of high efficiency components to maximize the efficiency with which the necessary energy is delivered. A high efficiency building shell generally includes greater insulation values in the building shell and glazing selection that combines functionality and high insulating properties while maximizing daylight penetration. Key building design elements that relate to the energy efficiency of the building envelope are compared to Code elements in **Appendix G**.

Chillers withdraw heat from a circulating cold water system, discharging the heat to the outside air using a cooling tower. High-efficiency chillers exceed ASHRAE standards using enhanced controls, enlarged and improved condenser sections, and high-efficiency compressors. The associated condenser heat recovery system uses a heat recovery exchanger to allow the reclamation of heat energy that is typically wasted and rejected via the chiller condenser. Air and water side economizers allow the use of ambient air for cooling when outside temperatures are low enough.

Heating units (boilers) will be more efficient than standard models, through the use of additional heat transfer surfaces (such as economizers).

For ventilation systems where a large percentage of fresh air makeup must be used, a heat exchanger uses exhaust air to pre-warm incoming air on cold days, and pre-cool incoming air on hot days. This system is not useful when a smaller percentage of outside air is being used, as the energy gain from pre-conditioning the air is lost to additional fan power needs.

Variable frequency drives reduce energy use in several building systems. By reducing the amount of air or water handled when not needed, fan/pump energy and conditioning energy is reduced. Certain spaces (such as parking garages) will be equipped with air quality monitors and variable frequency drive (VFD) fans in order to eliminate unnecessary fan operation. VFD fans are able to operate at part load when air quality levels do not require full load operation. Garages that employ this technology can expect to see approximately 60 percent savings in fan energy when compared against a baseline with continuously running fans during operating hours. Kitchen exhaust will also be demand controlled.

Room occupancy sensors will be used in offices, conference rooms, bathrooms and storage areas to turn off or reduce lighting when the space is not occupied. Similarly, HVAC will be designed to minimize energy use when hotel rooms are unoccupied.

Premium electric motors are more efficient than standard motors, although the differentials have shrunk in recent years. Nevertheless, premium electric motors will be specified for all significant uses such as HVAC equipment and elevators.

It has been demonstrated that reflective roofs do not reduce building energy use in the northeast region (i.e., decreased cooling load in summer is at least offset by increased heating load in winter), light colored or reflective roofs do aid in reducing urban heat island effect in summer and so will be utilized on most of

the roof surfaces except where green roofing is employed. Because of concerns with specular reflection distracting pilots approaching or leaving the Taunton Municipal Airport, roofs will not have a specular (mirror-like) finish.

By shading building structures, exterior shading devices can reduce the cooling requirements for those structures. The use of natural light will be incorporated into the design where possible, reducing the need for indoor electric lighting during the daytime.

Lighting design can, in many spaces, utilize less energy per square foot of area than Code requires. Lighting Power Densities for various spaces are compared to Code values in the VisualDOE modeling summarized in **Appendix G**.

LED lighting, which uses less energy than traditional lighting, is rapidly being accepted for external signage, marking and area lighting. Specialized exterior fluorescent lighting is similarly energy-efficient. Low-wattage fixtures will be arranged so as to direct the light toward the ground, avoiding light pollution following Night Sky guidelines. High performance exterior lighting will be utilized wherever it meets the functional requirements for the fixture.

Energy Star appliances and electronics utilize 10 to 30+ percent less electricity than standard units. Energy Star appliances will be utilized, wherever they are available for the intended function. While Energy Star ratings are not available for gaming devices, industry-wide development continues on reducing the energy use of gaming machines, including a voluntary standard for sustainable electronic gaming machines recently accepted by the American National Standards Institute (ANSI/LEO 8000-2011) and an EPA Tribal Casino Best Management Practices on light emitting diode (LED) retrofits (EPA-909-F-09-006). The Tribe will obtain gaming machines from the marketplace to support operations, and will review options and give preference to available energy efficient options when in the best interest of gaming operations. Because gaming machines are changed as-needed to respond to customer preferences, technologies and energy use profiles are subject to change based on customer demand for specific machines.

To ensure proper implementation of energy-saving measures, enhanced commissioning will include additional oversight of the construction and startup phases. An energy management system will provide the operators with real-time data on system performance, allowing optimization of the system to reduce energy demand and cost.

While not specifically addressed in the building energy modeling, the use of rainwater harvesting and low flow fixtures provides a marginal energy benefit by reducing the amount of water that needs to be treated and pumped to the Site. Also the Project Site will have substantial areas that remain in their current vegetated state (preserving trees), and tree planting will be an important part of the overall project design. Because refrigerants can be GHGs, an enhanced refrigerant management will ensure that the systems used have the minimum feasible global warming potential, and that leaks are prevented.

8.12.3.3 Mitigation Summary

Based on the stationary activity mitigation measures described in **Section 8.12.3.2**, and the transportation mitigation measures described in **Section 8.11.3**, predicted reductions in GHG emissions are summarized in **Table 8.12-13**, below.

**TABLE 8.12-13
SUMMARY OF GHG MITIGATION**

**Totals, short tons
CO₂/year**

With Mitigation	Direct	Indirect	Transportation	Total
Alternative A (Proposed Development)	7,154	9,297	5,547	21,998
Alternative B (Reduced Intensity I)	3,408	6,450	3,989	13,847
Alternative C (Reduced Intensity II)	5,274	8,524	5,547	19,345

Unmitigated	Direct	Indirect	Transportation	Total
Alternative A (Proposed Development)	8,350	12,254	5,876	26,481
Alternative B (Reduced Intensity I)	3,924	7,970	4,131	16,026
Alternative C (Reduced Intensity II)	6,366	11,333	5,876	23,576

Percent reduction over unmitigated case, Alternative A (Proposed Development):	20%
Percent reduction over unmitigated case, Alternative B:	16%
Percent reduction over unmitigated case, Alternative C:	22%

The mitigation measures incorporated into the Proposed Development represent a 20 percent reduction in GHG emissions, while mitigation of Alternative B would represent a 16 percent reduction, and mitigation of Alternative C would represent a 22 percent reduction.

8.12.4 EFFECT OF THE PROJECT ON CLIMATE CHANGE

On February 18, 2010, the federal Council on Environmental Quality (CEQ) issued draft guidance on the consideration of the effects of greenhouse gas (GHG) emissions and climate change in their evaluation of proposals for Federal actions under the NEPA. The guidance states:

“Because climate change is a global problem that results from global GHG emissions, there are more sources and actions emitting GHGs (in terms of both absolute numbers and types) than are typically encountered when evaluating the emissions of other pollutants. From a quantitative perspective, there are no dominating sources and fewer sources that would even be close to dominating total GHG emissions. The global climate change problem is much more the result of numerous and varied sources, each of which might seem to make a relatively small addition to global atmospheric GHG concentrations. CEQ proposes to recommend that environmental documents reflect this global context and be realistic in focusing on ensuring that useful information is provided

to decision makers for those actions that the agency finds are a significant source of GHGs.”

To provide global context, **Table 8.12-14** below compares global CO₂ emissions from the combustion of fossil fuel to proposed project CO₂ emissions.

**TABLE 8.12-14
COMPARISON OF GLOBAL CO₂ FOSSIL FUEL EMISSIONS TO ALTERNATIVE A CO₂E EMISSIONS**

Projected 2012 Global CO ₂ emissions from Fossil Fuel combustion & Cement production, metric tons (1)	35,600,000,000
Projected stationary source annual CO ₂ emissions from Alternative A, metric tons	22,327
Percent of Global CO ₂	0.00006%
Notes: CO ₂ = Carbon Dioxide Sources: (1) Tyndall Centre for Climate Change Research, University of East Anglia, Norwich Research Park, Norwich, NR4 7TJ, UK, December 2, 2012	

EPA has stated: “Greenhouse gases are a global pollutant for which local consequences are related to global, not local or regional atmospheric concentrations” (EPA-HQ-OAR-2010-0162, 11/30/2010). Based on the comparison in **Table 8.12-14** above, the GHG emissions from Alternative A (the Proposed Development) will not cause or significantly contribute to any substantive or measurable change in global atmospheric concentrations. As shown in **Table 8.12-10**, Alternatives B, C, and D would each have lower CO₂ emissions from stationary sources, and would therefore would also not cause or significantly contribute to any substantive or measurable change in global atmospheric concentrations. However, it is still appropriate to use the estimated level of GHG emissions as a reasonable proxy for assessing potential climate change impacts, and provide decision makers and the public with useful information for a reasoned choice among Alternatives.

8.12.5 EFFECT OF CLIMATE CHANGE ON THE PROJECT

The CEQ draft guidance states that the effects of climate change should be considered for projects that are located in areas that are considered vulnerable to specific effects of climate change, within the project’s timeframe. Because this project is not coastal and subject to potential increased effects of sea level rise or storm surge, and because this project is not particularly dependent on a resource or ecosystem that would be affected by climate change more than the overall environment, no specific analysis of the effects of climate change is needed beyond the analyses already being performed and presented.

SECTION 8.13

CULTURAL RESOURCES

This section examines the effects on cultural resources that would be likely to result from implementation of each of the alternatives.

8.13.1 APPROACH AND METHODS

Locational data regarding cultural resources identified during the course of research and fieldwork were overlaid on GIS-based project maps with disturbance areas associated with the action alternatives.

8.13.2 DETERMINATION OF SIGNIFICANT EFFECTS

Significant effects occur when those characteristic of a historic property that qualify it for inclusion in the NRHP are altered in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5[a]). Significant effects are listed below:

- Physical destruction of or damage to all or part of the property.
- Alteration of the property that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68).
- Removal of the property from its historic location.
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property that causes its deterioration.
- Transfer, lease, or sale of the property out of federal ownership or control.

8.13.3 RESULTS

The Project Site contains four potentially significant archaeological sites (First Light 1-4) and one site (19-BR-500), the East Taunton Industrial Park 2 Site, that has been recommended as eligible for listing on the National Register by the project archaeologists. The Project has the potential to have a direct effect on these five potentially significant archaeological sites.

8.13.3.1 Alternative A: Proposed Development

Alternative A (the Proposed Development) would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1-4 sites were identified as potentially significant, however, to determine if any of the sites meet the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested site examinations be undertaken for these sites. The MHC recommended the East Taunton Industrial Park 2 Site (19-BR-900) as eligible for listing in the National Register.

8.13.3.2 Alternative B: Reduced Intensity I

Alternative B would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1-4 sites were identified as potentially significant, however, to determine if any of the sites meet the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested site examinations be undertaken for these sites. The MHC recommended the East Taunton Industrial Park 2 Site (19-BR-900) as eligible for listing in the National Register.

8.13.3.3 Alternative C: Reduced Intensity II

Alternative C would impact the First Light 1 Site but avoid the First Light 2-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1 Site was identified as potentially significant, however, to determine if the site meets the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested a site examination be undertaken for this site.

8.13.3.4 Alternative D: No Action

Because it would entail the full build-out of the Project Site as an industrial park, Alternative D (No Action) would likely impact the same archaeological resources as Alternatives A and B. In the No Action Alternative, the project proponent(s) for the site build-out would be required to comply with State Register Review and/or Section 106 if state and/or federal funding, licensing, permits and/or approvals are required. Alternative D would require the project proponent(s) to conduct a site examination for First Light 1-4 to determine if any of the sites meet the criteria for National Register eligibility, and conduct a site examination if avoidance is not possible. Alternative D would also require the project proponent(s) to avoid the East Taunton Industrial Park 2 Site (19-BR-900) that was recommended as eligible for listing in the National Register. If avoidance is not possible, the site would be subject to data recovery.

8.13.4 CONSULTATION TO RESOLVE POTENTIAL EFFECTS TO ARCHAEOLOGICAL RESOURCES

As stated in **Section 7.13** of this DEIS, BIA is responsible for consulting with the SHPO and other Section 106 consulting parties regarding the resolution of an undertaking's adverse effects on historic properties. As of the date of this writing, consultation is in progress, pending input from the SHPO and other consulting parties regarding the eligibility of historic properties and the effects of the undertaking on properties that have been or may be determined eligible for listing on the NRHP. The MHC has determined the East Taunton Industrial Park 2 Site (19-BR-500) is eligible for listing on the National Register. The Tribe, in consultation with the MHC and BIA, will undertake a site examination of the First Light 1-4 sites to determine their eligibility for listing and boundaries to determine if avoidance of all or some of the sites is necessary and possible. If, following consultation, it is determined avoidance of the East Taunton Industrial Park 2 Site and, if determined eligible, the First Light 1-4 Sites is not possible, mitigation measures described below are likely to comprise the effects resolution determined through the

Section 106 consultation process. The resolution of adverse effects of the proposed undertaking will be summarized in the Final EIS.

8.13.5 MITIGATION

In the context on impacts to cultural resources, the three action alternatives would warrant implementation of the same mitigation for impacts to the East Taunton Industrial Park Site and the First Light 1-4 Sites, if determined eligible. Alternative C would warrant mitigation for impacts to the East Taunton Industrial Park Site and the First Light 1 Site, if determined eligible. Alternative D, the No-Action Alternative, would have no impacts; accordingly, no mitigation is required.

Impact CUL-1: Damage to East Taunton Industrial Park Site (19-BR-500) as a result of construction related ground disturbance.

Mitigation Measure CUL-1: Define in a memorandum of agreement appropriate resolutions of adverse effects to East Taunton Industrial Park Site (19-BR-500) and implement the proposed measures.

The East Taunton Industrial Park Site (19-BR-500) will be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the East Taunton Industrial Park Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the East Taunton Industrial Park Site (19-BR-500) cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-2: Damage to First Light 1 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-2: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 1 Site, if determined eligible, and implement the proposed measures.

If the First Light 1 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 1 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 1 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-3: Damage to First Light 2 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-2: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 2 Site, if determined eligible, and implement the proposed measures.

If the First Light 2 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 2 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 2 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-4: Damage to First Light 3 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-4: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 3 Site, if determined eligible, and implement the proposed measures.

If the First Light 3 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 3 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 3 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-5: Damage to First Light 4 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-4: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 4 Site, if determined eligible, and implement the proposed measures.

If the First Light 4 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 4 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 4 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-6: Damage to or destruction of as yet unidentified cultural resources as a result of construction-related ground disturbance.

Mitigation Measure CUL-6: Stop work and implement appropriate mitigation measures in the event of discovery of human remains during ground disturbing activities.

Discovery of human remains on non-Indian and non-federal land. Human remains are physical remains of a human body including, but not limited to, bones, teeth, hair, ashes, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Work will immediately stop work in the vicinity of an unanticipated discovery involving potentially human remains. The Construction Manager will be

immediately notified, and all work within the vicinity of the potential discovery will cease. The area will be secured by the Construction Manager. If the remains appear to be those of a recently deceased human, the Construction Manager will immediately notify the local police by calling 911. The Construction Manager will immediately notify the BIA, SHPO, and THPOs. Within 24 hours of the discovery, a professional archaeologist will examine the discovery to determine if the remains are human and have an archaeological association and, if so, if that association is aboriginal or non-aboriginal. The services of a physical anthropologist or other qualified professional will be retained if the professional archaeologist is unable to determine if the remains are human.

If skeletal remains are determined not to be human, and there is no significant archaeological context, the individual making the determination will immediately advise the BIA, SHPO, THPOs and Construction Manager that work may resume. The BIA will notify the SHPO and THPOs and receive concurrence that work may resume. The Construction Manager may then notify the construction crew leaders that work may be resumed.

The archaeologist will submit a letter report including photographs of the discovery site to the BIA, SHPO and THPOs within 15 business days of the determination. If skeletal remains are not human but are associated with an archaeological site (such as a prehistoric butchering site or kitchen midden), the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible field investigation, data recovery, and/or mitigation.

If the skeletal remains are human and not associated with an archaeological context, the individual making the determination will notify the BIA, SHPO and THPOs. If burial context indicates a crime, then a criminal investigation may ensue. Human remains found in a prehistoric archaeological context will be assumed to be Native American. If Native American human remains are identified (whether or not in an archaeological context), the archaeologist will immediately notify the BIA, SHPO, and THPOs. The Construction Manager will also notify the non-emergency departments of the local police. If human remains are present in a Native American archaeological context, the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible special disposition of the human remains.

The BIA will ensure proposals for site evaluation and will give special consideration to the fact that human remains are present and will prohibit intrusive examination of the immediate area of the remains prior to receipt of concurrence from SHPO and THPOs. The archaeologist will evaluate the potential for the presence of multiple graves and describe procedures for determining if other unidentified graves may be present, and will make efforts to accommodate the desires of the Indian tribes regarding treatment of human remains. If tribes wish to take custody of remains and re-inter them on non-tribal lands, the BIA will assist in any negotiations with the tribe and landowner. The BIA will make a good faith effort to accommodate requests from the tribes that they be present during the implementation of mitigation measures related to human remains.

If human remains are present in a non-Native American archaeological context, the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible field investigation, data recovery, and/or mitigation. The archaeologist will evaluate the potential for the presence of multiple graves and describe procedures for determining if other unidentified graves may be present.

If it is determined by BIA, in consultation with SHPO and THPOs, that the associated archaeological site is not eligible for the National Register of Historic Places, and that no mitigation measures are necessary, the respective medical examiner's office will be requested to coordinate with the local coroner and either direct the archaeologist to implement an approved plan for removal of the remains or arrange for alternative appropriate removal of the human remains.

Discovery of human remains on Indian trust and federal land. Human remains discovery procedures for Native American human remains discoveries are determined by NAGPRA, 43 CFR 10, and ARPA. Funerary objects, sacred objects, or objects of cultural patrimony, as defined in Section 2 of NAGPRA, are also subject to the provisions of NAGPRA and regulations at 43 CFR 10.

Nevertheless, if human remains are discovered on Indian land, the contractor shall stop work immediately within 100 feet of the discovery site and leave the area, leaving all equipment in place. The construction supervisor shall immediately notify the Tribe. The Tribe shall immediately provide oral notification to the BIA of the discovery. The Tribe shall also provide written notification to the BIA within 48 hours of the discovery via certified mail. The BIA will notify the Federal Bureau of Investigation or local law enforcement (coroner) of the discovery so the appropriate law enforcement agency can determine whether the discovery is a crime scene.

BIA will assign a staff archaeologist to make an assessment of the find as soon as is practicable. Upon making a determination of whether the remains are human and their origin, the BIA archaeologist will prepare a written notification to the BIA office regarding the discovery within 48 hours after the determination. The contractor must refrain from all activity in the vicinity of the discovery, except for any stabilization and protection measures that may be authorized by the BIA, until BIA issues specific authorization to the Tribe to resume work in the discovery vicinity.

If the BIA archaeologist determines that the human remains are of Native American origin, the BIA will provide certification of receipt of notification to the Tribe per 43 CFR 10.4(d). Upon receipt of certification, the Tribe can authorize work to resume in the discovery vicinity 30 days after certification. If the BIA determines that the remains are not Native American in origin, the remains will be treated pursuant to the procedures detailed in the section entitled Discovery of Human Remains on non-Indian and non-Federal Land above.

SECTION 8.13

CULTURAL RESOURCES

This section examines the effects on cultural resources that would be likely to result from implementation of each of the alternatives.

8.13.1 APPROACH AND METHODS

Locational data regarding cultural resources identified during the course of research and fieldwork were overlaid on GIS-based project maps with disturbance areas associated with the action alternatives.

8.13.2 DETERMINATION OF SIGNIFICANT EFFECTS

Significant effects occur when those characteristic of a historic property that qualify it for inclusion in the NRHP are altered in a manner that would diminish the integrity of the property's location, design, setting, materials, workmanship, feeling, or association (36 CFR 800.5[a]). Significant effects are listed below:

- Physical destruction of or damage to all or part of the property.
- Alteration of the property that is not consistent with the Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR 68).
- Removal of the property from its historic location.
- Change of the character of the property's use or of physical features within the property's setting that contribute to its historic significance.
- Introduction of visual, atmospheric, or audible elements that diminish the integrity of the property's significant historic features.
- Neglect of a property that causes its deterioration.
- Transfer, lease, or sale of the property out of federal ownership or control.

8.13.3 RESULTS

The Project Site contains four potentially significant archaeological sites (First Light 1-4) and one site (19-BR-500), the East Taunton Industrial Park 2 Site, that has been recommended as eligible for listing on the National Register by the project archaeologists. The Project has the potential to have a direct effect on these five potentially significant archaeological sites.

8.13.3.1 Alternative A: Proposed Development

Alternative A (the Proposed Development) would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1-4 sites were identified as potentially significant, however, to determine if any of the sites meet the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested site examinations be undertaken for these sites. The MHC recommended the East Taunton Industrial Park 2 Site (19-BR-900) as eligible for listing in the National Register.

8.13.3.2 Alternative B: Reduced Intensity I

Alternative B would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1-4 sites were identified as potentially significant, however, to determine if any of the sites meet the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested site examinations be undertaken for these sites. The MHC recommended the East Taunton Industrial Park 2 Site (19-BR-900) as eligible for listing in the National Register.

8.13.3.3 Alternative C: Reduced Intensity II

Alternative C would impact the First Light 1 Site but avoid the First Light 2-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1 Site was identified as potentially significant, however, to determine if the site meets the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. The MHC has requested a site examination be undertaken for this site.

8.13.3.4 Alternative D: No Action

Because it would entail the full build-out of the Project Site as an industrial park, Alternative D (No Action) would likely impact the same archaeological resources as Alternatives A and B. In the No Action Alternative, the project proponent(s) for the site build-out would be required to comply with State Register Review and/or Section 106 if state and/or federal funding, licensing, permits and/or approvals are required. Alternative D would require the project proponent(s) to conduct a site examination for First Light 1-4 to determine if any of the sites meet the criteria for National Register eligibility, and conduct a site examination if avoidance is not possible. Alternative D would also require the project proponent(s) to avoid the East Taunton Industrial Park 2 Site (19-BR-900) that was recommended as eligible for listing in the National Register. If avoidance is not possible, the site would be subject to data recovery.

8.13.4 CONSULTATION TO RESOLVE POTENTIAL EFFECTS TO ARCHAEOLOGICAL RESOURCES

As stated in **Section 7.13** of this DEIS, BIA is responsible for consulting with the SHPO and other Section 106 consulting parties regarding the resolution of an undertaking's adverse effects on historic properties. As of the date of this writing, consultation is in progress, pending input from the SHPO and other consulting parties regarding the eligibility of historic properties and the effects of the undertaking on properties that have been or may be determined eligible for listing on the NRHP. The MHC has determined the East Taunton Industrial Park 2 Site (19-BR-500) is eligible for listing on the National Register. The Tribe, in consultation with the MHC and BIA, will undertake a site examination of the First Light 1-4 sites to determine their eligibility for listing and boundaries to determine if avoidance of all or some of the sites is necessary and possible. If, following consultation, it is determined avoidance of the East Taunton Industrial Park 2 Site and, if determined eligible, the First Light 1-4 Sites is not possible, mitigation measures described below are likely to comprise the effects resolution determined through the

Section 106 consultation process. The resolution of adverse effects of the proposed undertaking will be summarized in the Final EIS.

8.13.5 MITIGATION

In the context on impacts to cultural resources, the three action alternatives would warrant implementation of the same mitigation for impacts to the East Taunton Industrial Park Site and the First Light 1-4 Sites, if determined eligible. Alternative C would warrant mitigation for impacts to the East Taunton Industrial Park Site and the First Light 1 Site, if determined eligible. Alternative D, the No-Action Alternative, would have no impacts; accordingly, no mitigation is required.

Impact CUL-1: Damage to East Taunton Industrial Park Site (19-BR-500) as a result of construction related ground disturbance.

Mitigation Measure CUL-1: Define in a memorandum of agreement appropriate resolutions of adverse effects to East Taunton Industrial Park Site (19-BR-500) and implement the proposed measures.

The East Taunton Industrial Park Site (19-BR-500) will be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the East Taunton Industrial Park Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the East Taunton Industrial Park Site (19-BR-500) cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-2: Damage to First Light 1 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-2: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 1 Site, if determined eligible, and implement the proposed measures.

If the First Light 1 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 1 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 1 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-3: Damage to First Light 2 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-2: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 2 Site, if determined eligible, and implement the proposed measures.

If the First Light 2 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 2 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 2 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-4: Damage to First Light 3 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-4: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 3 Site, if determined eligible, and implement the proposed measures.

If the First Light 3 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 3 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 3 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-5: Damage to First Light 4 Site as a result of construction related ground disturbance.

Mitigation Measure CUL-4: Define in a memorandum of agreement appropriate resolutions of adverse effects to First Light 4 Site, if determined eligible, and implement the proposed measures.

If the First Light 4 Site is determined to be a historic property eligible for NRHP listing under NRHP criterion D, the site is expected to be damaged as a result of Alternatives A and B. Construction impacts are anticipated to be extensive and design flexibility is anticipated to be minimal in that avoidance of impacts through redesign of the proposed project is infeasible.

For the purposes of Section 106 and NEPA reviews it is assumed that impacts to the First Light 4 Site would be significant. Under Section 106, when a federal agency funds a proposed action that would result in adverse effects to historic properties, the agency must work with consulting parties such as other federal agencies, the SHPO, and Native American tribes to execute a memorandum of agreement (MOA) that described the resolution of adverse effects. Under this scenario, the MOA would be executed and the stipulations of the document implemented prior to construction of the proposed action. Alternatively, BIA, SHPO, Native American tribes, and other consulting parties may enter into a programmatic agreement if the effects of the proposed project on the First Light 4 Site cannot be fully determined prior to approval of the proposed action (36 CFR 800[b][1][ii]).

Impact CUL-6: Damage to or destruction of as yet unidentified cultural resources as a result of construction-related ground disturbance.

Mitigation Measure CUL-6: Stop work and implement appropriate mitigation measures in the event of discovery of human remains during ground disturbing activities.

Discovery of human remains on non-Indian and non-federal land. Human remains are physical remains of a human body including, but not limited to, bones, teeth, hair, ashes, and preserved soft tissues (mummified or otherwise preserved) of an individual. Remains may be articulated or disarticulated bones or teeth. Work will immediately stop work in the vicinity of an unanticipated discovery involving potentially human remains. The Construction Manager will be

immediately notified, and all work within the vicinity of the potential discovery will cease. The area will be secured by the Construction Manager. If the remains appear to be those of a recently deceased human, the Construction Manager will immediately notify the local police by calling 911. The Construction Manager will immediately notify the BIA, SHPO, and THPOs. Within 24 hours of the discovery, a professional archaeologist will examine the discovery to determine if the remains are human and have an archaeological association and, if so, if that association is aboriginal or non-aboriginal. The services of a physical anthropologist or other qualified professional will be retained if the professional archaeologist is unable to determine if the remains are human.

If skeletal remains are determined not to be human, and there is no significant archaeological context, the individual making the determination will immediately advise the BIA, SHPO, THPOs and Construction Manager that work may resume. The BIA will notify the SHPO and THPOs and receive concurrence that work may resume. The Construction Manager may then notify the construction crew leaders that work may be resumed.

The archaeologist will submit a letter report including photographs of the discovery site to the BIA, SHPO and THPOs within 15 business days of the determination. If skeletal remains are not human but are associated with an archaeological site (such as a prehistoric butchering site or kitchen midden), the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible field investigation, data recovery, and/or mitigation.

If the skeletal remains are human and not associated with an archaeological context, the individual making the determination will notify the BIA, SHPO and THPOs. If burial context indicates a crime, then a criminal investigation may ensue. Human remains found in a prehistoric archaeological context will be assumed to be Native American. If Native American human remains are identified (whether or not in an archaeological context), the archaeologist will immediately notify the BIA, SHPO, and THPOs. The Construction Manager will also notify the non-emergency departments of the local police. If human remains are present in a Native American archaeological context, the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible special disposition of the human remains.

The BIA will ensure proposals for site evaluation and will give special consideration to the fact that human remains are present and will prohibit intrusive examination of the immediate area of the remains prior to receipt of concurrence from SHPO and THPOs. The archaeologist will evaluate the potential for the presence of multiple graves and describe procedures for determining if other unidentified graves may be present, and will make efforts to accommodate the desires of the Indian tribes regarding treatment of human remains. If tribes wish to take custody of remains and re-inter them on non-tribal lands, the BIA will assist in any negotiations with the tribe and landowner. The BIA will make a good faith effort to accommodate requests from the tribes that they be present during the implementation of mitigation measures related to human remains.

If human remains are present in a non-Native American archaeological context, the archaeologist will notify the BIA, SHPO and THPOs and consult with the parties to determine the scope of possible field investigation, data recovery, and/or mitigation. The archaeologist will evaluate the potential for the presence of multiple graves and describe procedures for determining if other unidentified graves may be present.

If it is determined by BIA, in consultation with SHPO and THPOs, that the associated archaeological site is not eligible for the National Register of Historic Places, and that no mitigation measures are necessary, the respective medical examiner's office will be requested to coordinate with the local coroner and either direct the archaeologist to implement an approved plan for removal of the remains or arrange for alternative appropriate removal of the human remains.

Discovery of human remains on Indian trust and federal land. Human remains discovery procedures for Native American human remains discoveries are determined by NAGPRA, 43 CFR 10, and ARPA. Funerary objects, sacred objects, or objects of cultural patrimony, as defined in Section 2 of NAGPRA, are also subject to the provisions of NAGPRA and regulations at 43 CFR 10.

Nevertheless, if human remains are discovered on Indian land, the contractor shall stop work immediately within 100 feet of the discovery site and leave the area, leaving all equipment in place. The construction supervisor shall immediately notify the Tribe. The Tribe shall immediately provide oral notification to the BIA of the discovery. The Tribe shall also provide written notification to the BIA within 48 hours of the discovery via certified mail. The BIA will notify the Federal Bureau of Investigation or local law enforcement (coroner) of the discovery so the appropriate law enforcement agency can determine whether the discovery is a crime scene.

BIA will assign a staff archaeologist to make an assessment of the find as soon as is practicable. Upon making a determination of whether the remains are human and their origin, the BIA archaeologist will prepare a written notification to the BIA office regarding the discovery within 48 hours after the determination. The contractor must refrain from all activity in the vicinity of the discovery, except for any stabilization and protection measures that may be authorized by the BIA, until BIA issues specific authorization to the Tribe to resume work in the discovery vicinity.

If the BIA archaeologist determines that the human remains are of Native American origin, the BIA will provide certification of receipt of notification to the Tribe per 43 CFR 10.4(d). Upon receipt of certification, the Tribe can authorize work to resume in the discovery vicinity 30 days after certification. If the BIA determines that the remains are not Native American in origin, the remains will be treated pursuant to the procedures detailed in the section entitled Discovery of Human Remains on non-Indian and non-Federal Land above.

SECTION 8.14

NOISE

8.14.1 METHODOLOGY

8.14.1.1 Operational Noise

Anticipated noise impacts associated with the Project were predicted at the nearest noise-sensitive receptors surrounding the Project using the CadnaA noise calculation software. This software was developed by DataKustik, GmbH, Munich, Germany. This software uses the ISO 9613-2 industrial noise calculation methodology. CadnaA allows for octave band calculation of noise from multiple noise sources, as well as for computation of diffraction around building edges and multiple reflections off parallel buildings and solid ground areas. In this manner, all significant noise sources and geometric propagation effects are accounted for in the noise modeling. As a conservative assumption, no credit was taken for attenuation from vegetation. The casino hotel, water park hotel, and parking garage structures provided barrier shielding, reducing sound levels to some locations in the community, and were taken into consideration under the various alternatives.

8.14.1.2 Construction Noise

Construction noise is discussed qualitatively in **Section 8.19.4**.

8.14.2 NOISE IMPACTS

8.14.2.1 Alternative A: Proposed Development

The primary source of potential noise from operation of the Proposed Development (Alternative A) is the mechanical equipment used to heat, cool, and supply back-up power to the facility. At this stage of development, the facility is in the preliminary design phase so the equipment layout and specifications are not final. However, enough information was provided to conduct initial sound level modeling. **Table 8.14-1** lists the types, quantities, sound power level (per unit), and location of the equipment input to the CadnaA software under the Proposed Development. On-site patron traffic will be traveling at modest speeds and therefore will not contribute to a meaningful change in community (off-site) sound levels. **Table 8.14-2** summarizes the expected future sound levels at the same three locations as were measured as potential sensitive receptors under the existing conditions. The modeling results assume every single piece of equipment is operating simultaneously, including all five emergency generators. This is a very conservative (worst-case) assumption.

**TABLE 8.14-1
EQUIPMENT ASSUMED IN SOUND LEVEL MODELING – ALTERNATIVE A**

Location	Equipment	Quantity	Sound Power (per unit) (dBA)
Casino & Hotel	Cooling tower	6	102
Casino & Hotel	Casino RTU	17	102
Casino & Hotel	Standard RTU	34	97
Casino & Hotel	Condensing unit	8	90
Casino & Hotel	Kitchen exhaust fan	23	87
Casino & Hotel	Emergency generator	4	106
Waterpark & Hotel	Standard RTU	7	97
Waterpark & Hotel	Emergency generator	1	106

**TABLE 8.14-2
MAXIMUM SOUND LEVEL MODELING RESULTS – ON-SITE MECHANICAL EQUIPMENT**

Location	Alternative A	Alternative B	Alternative C
1 (Williams St)	33	33	26
2 (Pinehill St)	31	31	29
3 (Stevens St)	33	39	33

8.14.2.2 Alternative B: Reduced Intensity I

The CadnaA software was re-run for the Alternative B scenario. The primary changes from a noise perspective as compared to Alternative A were that the garage building footprint was reduced, the 15-story casino hotel and its associated rooftop equipment were eliminated. **Table 8.14-2** summarizes the expected future sound levels at the same three locations as were measured under the existing conditions. The modeling results assume every single piece of equipment is operating simultaneously, including all five emergency generators. This is a very conservative (worst-case) assumption. The elimination of the 15-story hotels and the shielding effect they have on some of the casino rooftop equipment is reflected in slightly higher sound levels at Location 3 to the east.

8.14.2.3 Alternative C: Reduced Intensity II

The CadnaA software was re-run for the Alternative C scenario. The changes from a noise perspective as compared to Alternative A were that the indoor water park, the 15-story water park hotel, and the water park emergency generator were eliminated. **Table 8.14-2** summarizes the expected future sound levels at the same three locations as were measured under the existing conditions. The modeling results assume every single piece of equipment is operating simultaneously, including all four emergency generators. This is a very conservative (worst-case) assumption. The elimination of the water park facility is reflected in lower sound levels at Location 1 to the north.

8.14.2.4 Alternative D: No Action

At this time, no future design program is known for the industrial park build-out projected under Alternative D. Although it has been estimated that Alternative D would result in a total of approximately 737,000 square feet of building space on the Project Site, it is impossible to assign a dBA value to this Alternative without knowing specific mechanical equipment needs, which can vary significantly among industrial buildings. By definition, it will be equal to or louder (higher sound levels) than the existing condition sound levels measured in November 2012. No attempt will be made to quantify possible future sound levels under this Alternative.

8.14.3 COMPARISON TO CRITERIA

The results of the modeling are compared to existing background levels as per the MassDEP Noise Policy. As explained in **Section 7.14.2.1**, the Federal Highway Administration (FHWA) Noise Abatement Criteria (NAC) do not apply because this is not a federally funded highway construction and/or improvement Project. Further, the MassDEP Noise Policy limiting increases to 10 dBA over background conditions serves as a more limiting criterion than the FHWA NAC of 67 dBA exterior to a residence. While projects on federal trust land will not be subject to the MassDEP noise regulations and noise policy, the policy provides a useful standard to which impacts can be compared.

The results for Alternative A are shown in **Table 8.14-3A** (daytime existing) and **Table 8.14-3B** (nighttime existing), the results for Alternative B are shown in **Table 8.14-4A** (daytime existing) and **Table 8.14-4B** (nighttime existing), and the results for Alternative C are shown in **Table 8.14-5A** (daytime existing) and **Table 8.14-5B** (nighttime existing).

These results show no change in sound levels during the day at any location, and a 0 to 3 decibel change at night under any of the Development Alternatives. These are well below the MassDEP Noise Policy limiting impacts to an increase of 10 decibels or less. In addition, the octave bands do not show a “pure tone” at any of these locations as defined by the MassDEP Noise Policy. Therefore, the noise impacts of Alternatives A, B, and C are considered less than significant, and no mitigation is required.

**TABLE 8.14-3A
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE A (DAYTIME)**

Location	Project-Only (dBA)	Existing Daytime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	33	59	59	0	Yes
2 (Pinehill St)	31	52	52	0	Yes
3 (Stevens St)	33	52	52	0	Yes

**TABLE 8.14-3B
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE A (NIGHTTIME)**

Location	Project-Only (dBA)	Existing Nighttime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	33	44	44	0	Yes
2 (Pinehill St)	31	43	43	0	Yes
3 (Stevens St)	33	40	41	1	Yes

**TABLE 8.14-4A
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE B (DAYTIME)**

Location	Project-Only (dBA)	Existing Daytime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	33	59	59	0	Yes
2 (Pinehill St)	31	52	52	0	Yes
3 (Stevens St)	39	52	52	0	Yes

**TABLE 8.14-4B
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE B (NIGHTTIME)**

Location	Project-Only (dBA)	Existing Nighttime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	33	44	44	0	Yes
2 (Pinehill St)	31	43	43	0	Yes
3 (Stevens St)	39	40	43	3	Yes

**TABLE 8.14-5A
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE C (DAYTIME)**

Location	Project-Only (dBA)	Existing Daytime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	26	59	59	0	Yes
2 (Pinehill St)	29	52	52	0	Yes
3 (Stevens St)	33	52	52	0	Yes

**TABLE 8.14-5B
SOUND LEVEL MODELING COMPARISON TO CRITERIA – ALTERNATIVE C (NIGHTTIME)**

Location	Project-Only (dBA)	Existing Nighttime L90 (dBA)	Project plus Existing (dBA)	Increase over Existing (dBA)	Meets MassDEP Policy?
1 (Williams St)	26	44	44	0	Yes
2 (Pinehill St)	29	43	43	0	Yes
3 (Stevens St)	33	40	41	1	Yes

SECTION 8.15

VISUAL

Based on comments received during Scoping, the visual impacts of each of the Alternatives were considered at two scales. A viewshed analysis was conducted to determine the extent to which major project elements would be visible within a two-mile radius to determine each Alternative's potential visual impacts on community character. Within the Project Site, steps have been taken to design the elements of each Alternative so that the new architecture would create beneficial visual impacts in each of the Development Alternatives.

8.15.1 COMMUNITY CHARACTER

8.15.1.1 Viewshed Analysis

To evaluate the regional visual impacts of the proposed buildings on the Taunton Project Site, a GIS-based viewshed analysis was conducted to illustrate areas of potential visibility within a two-mile region surrounding the Project Site. This section describes the results of the viewshed analysis.

For descriptions of off-site impacts of shadow and lighting on the Project Site, see **Section 8.15.2**.

Methodology

The primary input for the analysis was LiDAR terrain data captured during the winter and spring of 2011. MassGIS provided these elevation data as bare-earth digital surface model rasters (aka DEMs - digital elevation models) in GeoTIFF format. The data have a fundamental vertical accuracy of 0.3 meters and a raster resolution of one meter. Given the large extent of the Project Site and surrounding two-mile radius, it was necessary to mosaic several of the terrain files to create a single seamless ground surface. Once the appropriate files were processed into a mosaic, it was then clipped to the two-mile study area. This clipped mosaic was subsequently resampled at a 10m cell size and reinterpolated using inverse distance weighting in order to produce a smoother ground surface and speed up computer processing times.

The proposed structures were incorporated into the model as single points within the approximate center of each structure's footprint. Heights were extracted from 3-dimensional AutoCADD drawings and incorporated into the GIS model at the appropriate vertical elevations by creating an offset above the existing ground surface. The final elevations of the proposed structures were as follows: hotel (265 feet), parking garage (85 feet), and water park hotel (170 feet). These elevations reference the vertical datum NAVD88. These numbers represent the overall final elevation of each structure, not simply the height above ground.

Viewshed models were produced for each structure using the Viewshed function of ESRI's Spatial Analyst extension for ArcGIS. Essentially, this function compares the elevation of the proposed structure with surrounding elevations and evaluates visibility from each individual pixel within the study area. The result is a raster (pixel-based) file with two values: 0, for areas where the structure will not be visible; and 1, for areas where the structure will be visible. To provide a realistic portrayal of potential visibility, the

screening effects of existing vegetation were considered. The MassGIS land use layer was used to identify forested areas and based on observations made in the field, an average tree height of approximately 75 feet was assigned to these areas. These forested areas were added to the existing topography through the “raster math” function in ArcCatalog, effectively creating 75-foot regions on top of the ground. It was also assumed that the Proposed Development would not be visible from within the forested areas; therefore, all forested areas were classified as not visible. The viewshed function was run based on the data inputs and a raster was produced showing areas of potential visibility based on topography and vegetation.

Results

The results of the realistic viewshed analysis including the forested area are shown in **Figures 8.15-1, 8.15-2, and 8.15-3** and described according to Alternative below.

Alternative A: Proposed Development

The development proposed under Alternative A includes the casino hotels, 5-story parking garage, and water park hotel. Therefore, the results shown in **Figures 8.15-1, 8.15-2, and 8.15-3** are all relevant to the Alternative A analysis.

As shown in **Figure 8.15-1**, the casino hotel buildings proposed under Alternative A would primarily be visible in their immediate vicinity and from portions of the Silver City Galleria mall and surrounding parking lots. They would also be visible from the Route 140-Stevens Street interchange, the Crossroads Commerce Center, and in intermittent, narrow areas in the Stevens Street neighborhood along Stevens Street and Pinehill Road. Narrow bands of visibility are also predicted in a small residential and commercial area off of Route 140 to the northwest of the Project Site; this area is cleared of trees and lies on a hill.

As shown in **Figure 8.15-2**, the parking garage proposed under Alternative A would only be visible from Stevens Street and on-site in the immediately surrounding area.

The water park hotel proposed to be developed under Alternative A would be visible to the extent shown in **Figure 8.15-3**. Areas of visibility include the hotel’s immediate surroundings, the Crossroads Commerce Center area, and in parts of the Pinehill Street neighborhood including Garden Street, Woodlawn Street, and Caswell Street. The waterpark hotel would also be visible from small areas around the Bristol-Plymouth Technical school campus and in a small elevated area on the Silver City Galleria property.

Alternative B: Reduced Intensity I

Alternative B, as described in **Section 4.3.2**, includes a smaller casino without hotels, a five-story parking garage, and the water park and hotel. Therefore, the results shown in **Figures 8.15-2 and 8.15-3** are relevant to the Alternative B analysis.

As shown in **Figure 4.3-2**, the parking garage under Alternative B would be reduced in width compared to that described under Alternatives A and C. However, the height of the parking garage is consistent across each development Alternative. Thus, it can be assumed that the visibility shown in **Figure 8.15-2** closely represents the visibility of the parking garage under Alternative B. As in Alternative A, this parking garage would only be visible from Stevens Street and on-site in the immediately surrounding area.

The water park hotel described in Alternative B is identical to that proposed under Alternative A. The visibility of this building under Alternative B would be consistent with that shown in **Figure 8.15-3** and described in **Section 8.15.2.1**.

Alternative C: Reduced Intensity II

Alternative C, described in **Section 4.3.3**, includes the casino hotels and five-story parking garage, but does not include any water park development north of the rail lines that bisect the Project Site. Therefore, the results shown in **Figures 8.15-1 and 8.15-2** are relevant to the Alternative C analysis.

The casino hotels described in Alternative C are identical to those proposed under Alternative A. The visibility of this building under Alternative C would be consistent with that shown in **Figure 8.15-1** and described in **Section 8.15.2.1**.

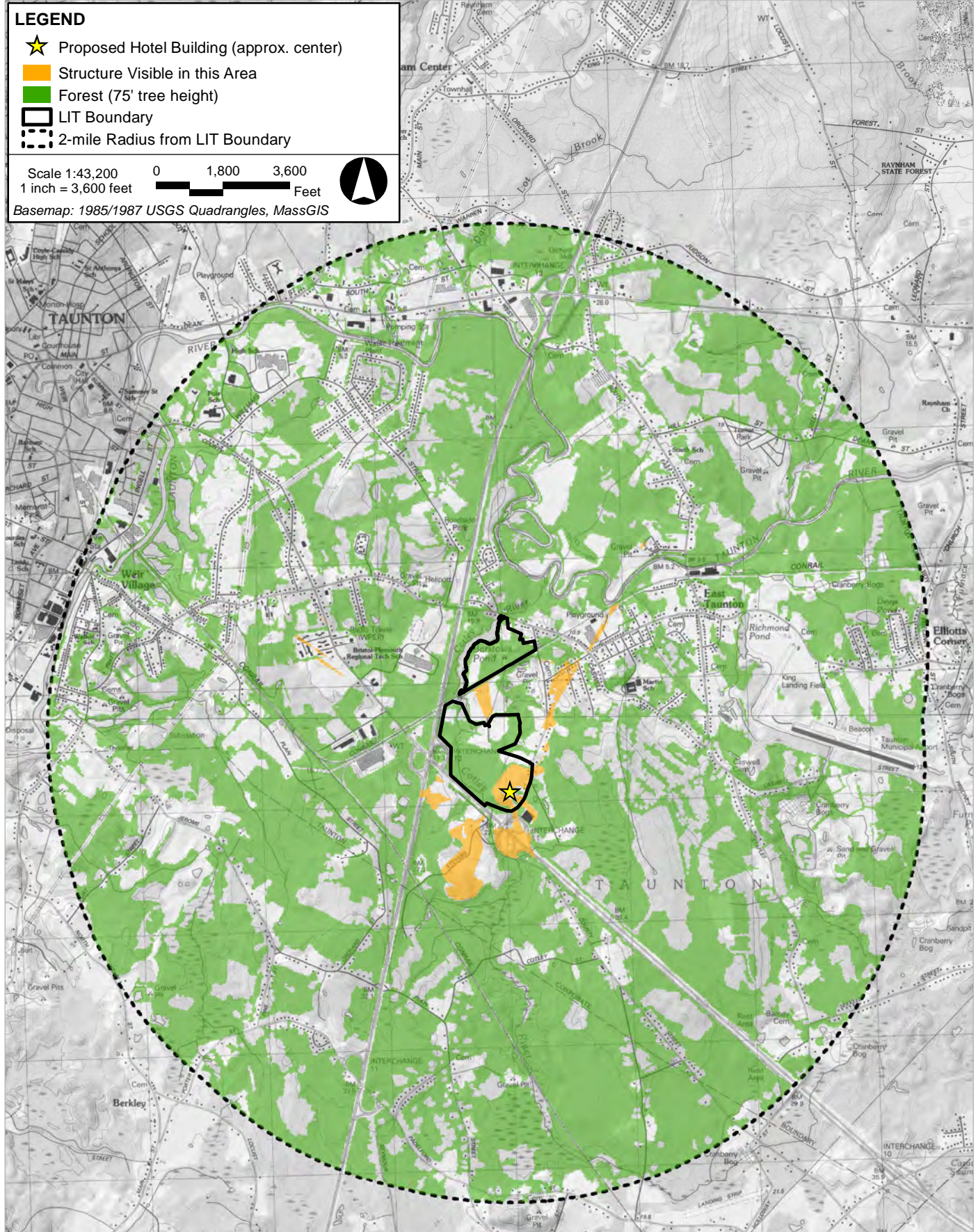
The parking garage described in Alternative C is identical to that proposed under Alternative A. The visibility of this building under Alternative C would be consistent with that shown in **Figure 8.15-2** and described in **Section 8.15.2.1**.

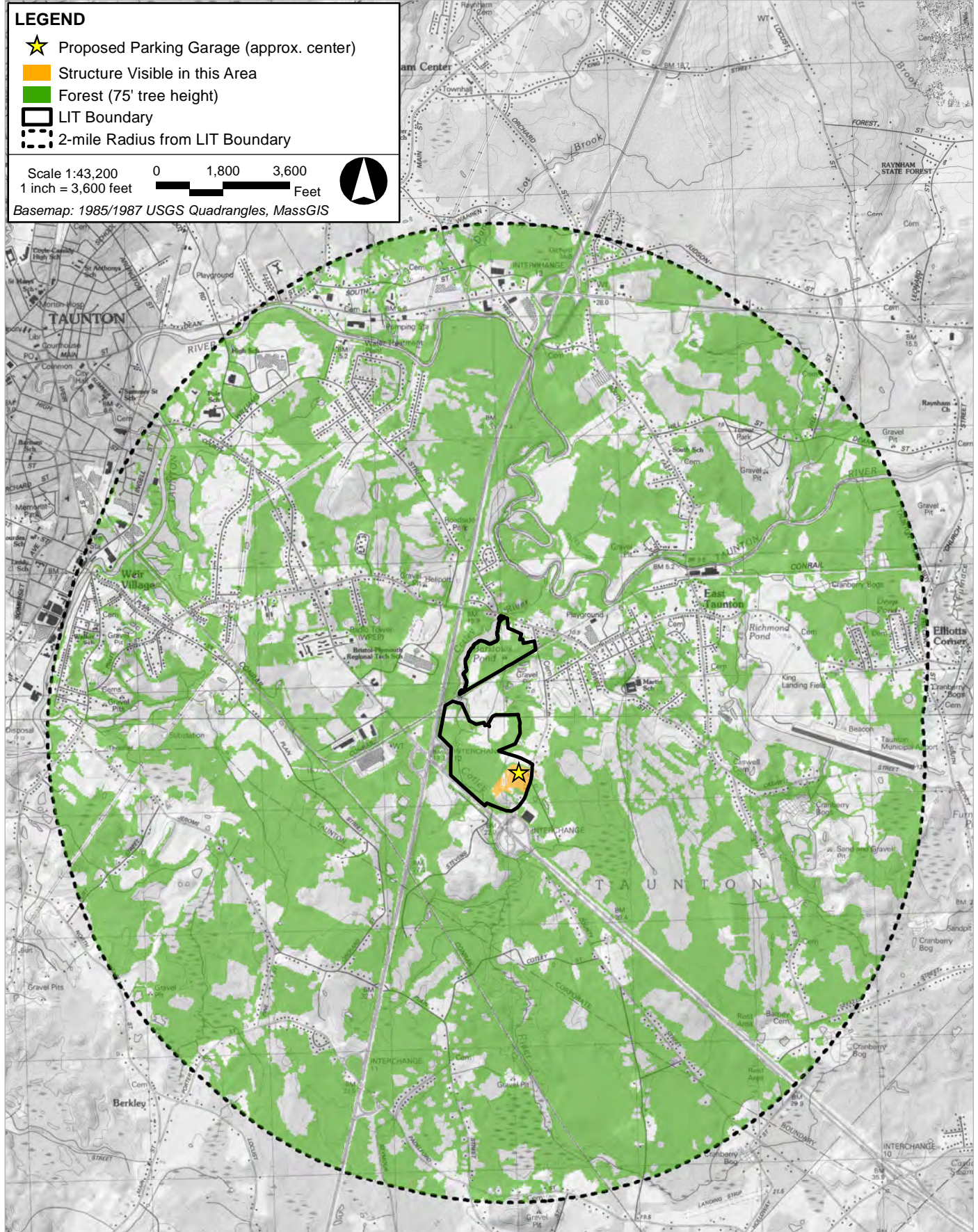
Alternative D: No Action

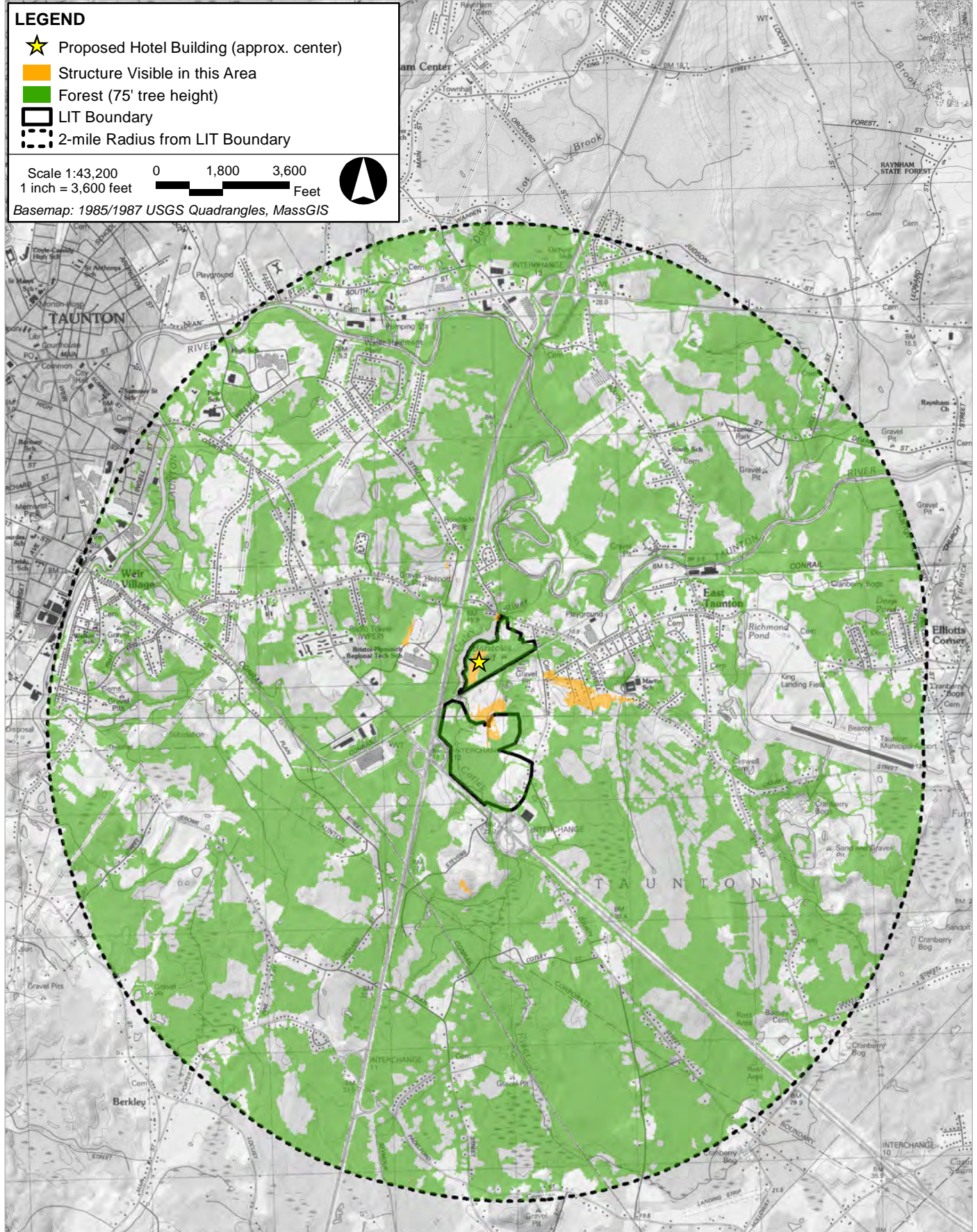
The development assumed under Alternative D, described in **Section 4.3.5**, includes several warehouse-style buildings designated for commercial-industrial-warehouse and office use. Based on development in industrial parks, including the LUIP, these buildings are not likely to be more than two stories tall. Their visibility would be almost entirely limited to their immediate surroundings due to the extent of 75-foot tree-cover in the area.

8.15.1.2 Visual Simulations

To further evaluate the visual impacts of the proposed buildings on the community surrounding the Project Site, simulations of the Proposed Development were created from various vantage points, including the entrance to the East Taunton Elementary School at 58 Stevens Street, a nearby sensitive receptor. These views are presented in **Figures 8.15-4 through 8.15-10**. Due to topography and tree cover, as presented in **Section 8.15.1.1**, the Proposed Development, which includes all structures proposed, is not visually imposing from most locations. The Proposed Development, as described previously, includes the largest building elements proposed among the Alternatives. Most notably, Alternatives B and D would eliminate the 15-story hotel buildings depicted in these simulations.











Existing Conditions



Proposed Development Rendering

SOURCE: JCJ Architecture

Mashpee Wampanoag Tribe – Fee to Trust Acquisition – Draft EIS

Figure 8.15-5

Visual Simulation A: From Stevens Street at East Taunton Elementary Driveway



Existing Conditions



Proposed Development Rendering



Existing Conditions



Proposed Development Rendering



Existing Conditions



Proposed Development Rendering



Existing Conditions



Proposed Development Rendering



Existing Conditions



Proposed Development Rendering

8.15.2 PROJECT SITE

8.15.2.1 Alternative A: Proposed Development

Architectural Design

The development described under Alternative A would convert the Project Site from an industrial park development with warehouse-style architecture and small landscaped areas to a destination resort casino with architectural elements representing the Mashpee Wampanoag Tribe and its cultural heritage. Building designs include components specific to the natural elements of the Project Site and its surroundings.

The use of materials and color selections in the new buildings would serve to ground the Proposed Development in its location and thus minimize concerns that the buildings might appear imposing. The tallest elements, the two casino hotels on the southern end of the Project Site, would be constructed of medium to low-reflective glass that would partially reflect the surrounding sky and environment, while minimizing glare. The double curve of the two hotels would evoke a direct relationship to a flowing ocean wave, as would the selection of colors in the glazing and patterning in the exterior.

Components and fenestrations of the exterior architecture of other major elements of Alternative A, including the casino building and water park, as well as elements of their interiors, would also reflect natural forms and elements important to the Tribe.

The design of Alternative A considers concerns of visual impacts spilling out from the Project Site onto the street or adjacent properties. By developing major project components on either side of O'Connell Way, as shown on the site plan in **Figure 4.3-1**, the design allows for some impact elements to occur within a "courtyard" entrance area. These elements may involve lighting and video, but their impacts would be shielded from neighbors and other locations on the Project Site by the structures built around this courtyard.

Shadow

Shadow studies were conducted using the Alternative A model, which represents the largest and tallest building program. The results of the shadow studies are shown in **Figure 8.15-11**. As shown on that figure, impacts of shadow on the Project Site are generally minimal and limited to small portions of the Project Site throughout most of the year. During the late afternoon in the spring, summer, and fall, a small amount of shadow would be cast from the casino hotels and parking garage onto a small portion of Stevens Street near the Project Site entrance. In the late afternoon near the Winter Solstice when shadows are at their longest of any time of the year, shadows would be cast across Stevens Street onto adjacent properties. The low overall light levels of late winter afternoons will help lessen these impacts.



Lighting

The Project Site would include outdoor lighting at levels determined based on the goal of protecting public health and safety. Traditionally, casino developments utilize higher lighting levels than other commercial developments. The highest lighted areas during night hours under each of the Development Alternatives would be the building entrance areas and exterior exitways, which would be lit at levels of four to seven foot-candles and three to five foot-candles, respectively. The service vehicle driveway to the north of the parking structure and the emergency exits from the parking structure would also be well-lit at a level of two foot-candles. Crosswalks and handicapped access ramps would be lit at a minimum level of 1.5 foot-candles to ensure safety.

Sidewalks adjacent to O'Connell Way and internal to the entry courtyard would have night time light levels equal to 1.5 foot-candles minimum. These lights would be prevented from washing into neighboring properties by the structures surrounding the courtyard entry, described above. Public gathering areas at the hotel roof terrace would have a minimum light capacity level of 1.5 foot-candles, but would typically be set at lower values for the ambiance of the space. These areas would also be prevented from washing into neighboring properties or the night sky by screens created by building structure. Sensitive receptors in the vicinity of the Project Site, specifically the East Taunton Elementary School and Christ Community Church at 41 Stevens Street, would be protected from lighting by topography, tree cover and structural screens. These locations are not anticipated to experience significant impacts from Project lighting.

8.15.2.2 Alternative B: Reduced Intensity I

Architectural Design

As under Alternative A, the architecture of Alternative B would involve elements reflecting the natural surroundings of the Project Site and the Tribe's cultural heritage. As shown on the site plan in **Figure 4.3-2**, Alternative B would eliminate the two casino hotels described above and would reduce the size of the casino compared to Alternative A.

Shadow

Because Alternative B would eliminate the two 15-story casino hotels included in Alternative A, shadow impacts would be substantially reduced. Like Alternative A, shadows would generally be limited to areas within the Project Site.

Lighting

Project Site lighting would be similar to that described under Alternative A in that it would meet requirements to promote safety and public health on the Site. Overall lighting impacts would be reduced compared to Alternative A due to the elimination of the casino hotels.

8.15.2.3 Alternative C: Reduced Intensity II

Architectural Design

As under Alternative A, the architecture of Alternative C would involve elements reflecting the natural surroundings of the Project Site and the Tribe's cultural heritage. As shown on the site plan in **Figure 4.3-3**, Alternative C would not include the water park or any related development north of the railroad tracks on the Project Site.

Shadow

Because Alternative C would eliminate the water park development and related construction described under Alternative A, Alternative C would include no shadow impacts to the Project Site north of the railroad tracks. All other shadow impacts would be identical to those described under Alternative A.

Lighting

Project Site lighting would be similar to that described under Alternative A in that it would meet requirements to promote safety and public health on the Site. Overall lighting impacts would be reduced compared to Alternative A due to the elimination of the water park and related facilities.

8.15.2.4 Alternative D: No Action

Architectural Design

Because development under the No Action Alternative is presumed to involve several warehouse-style buildings designated for commercial-industrial-warehouse and office use, Alternative D would not represent a significant visual change from the existing conditions of the Project Site.

Shadow

The continued development of industrial park buildings no more than two stories tall would not create any significant shadow impacts on or off the Project Site.

Lighting

Under Alternative D, buildings on the Project Site would not be anticipated to be highly used during nighttime hours. Lighting on the Project Site under Alternative D would be expected to meet safety requirements, but would not impact neighboring properties or the night sky.

SECTION 8.16

SOCIOECONOMIC CONDITIONS

8.16.1 COMMUNITY INFRASTRUCTURE

8.16.1.1 Alternative A: Proposed Development

This section describes the potential impacts to community infrastructure in the City of Taunton (City) and the broader Plymouth and Bristol County area as a result of the Proposed Development. The Proposed Development is expected to introduce approximately 3,500 employees as well as visitors to the proposed casino. These employees would include current City residents who are unemployed or underemployed, as well as workers from outside the City seeking jobs. Therefore, the Proposed Development would introduce some new households to the City, but not all employees would represent new households in the area. The households introduced by employees of the Proposed Development are expected to represent a small proportion of the 22,332 households in the City of Taunton and the 213,010 households in Bristol County; nevertheless, these employees and visitors would create additional demands on the existing community infrastructure in the City of Taunton.

As described in **Section 7.16**, property taxes for the proposed Project Site during fiscal year 2012 are estimated at \$369,014. This represents 0.51 percent of the total property tax revenue for the City of Taunton. With the Proposed Development, the Project Site properties would be removed from the City of Taunton tax roll and would no longer generate property taxes to support City services and community infrastructure. Because the tax revenues generated by the Project Site parcels represent a small proportion of total property tax revenues for the City and the Tribe has committed to impact payments as described below, the removal of the Project Site parcels from the tax roll would not have an adverse impact on the City of Taunton. On July 10, 2012, the City of Taunton and the Mashpee Wampanoag Tribe entered into an Intergovernmental Agreement (IGA) which sets forth the terms for the Tribe's development of the Proposed Development in the City of Taunton. The IGA establishes impact payments that the Tribe has agreed to make to the City of Taunton in order to mitigate potential impacts that would result from the Proposed Development, including impacts to community facilities and service providers. The Tribe has committed through the IGA to pay the City all up-front costs necessary to improve and upgrade the City's police, fire, water, sewer, administrative, and other facilities. In addition, the Tribe would be obligated through the IGA to pay for the City's ongoing costs resulting from the hiring of additional police, fire, administrative, and other personnel. The terms of the IGA are based on the estimated services necessitated by the project-induced demand. All one-time and ongoing payments from the Tribe to the City, as specified in the IGA, are summarized below for each community service provider.

There is also the potential that the Proposed Development would result in a reduction in demand for certain community facilities and services. The IGA states that subject to any preference for the hiring and vendor selection of Tribal members, the Tribe will work in good faith to employ City residents and patronize local vendors for goods and services during the construction and operation of the Proposed Development. As the Tribe would be expected to employ City residents who are unemployed or

underemployed for the construction and operation of the proposed casino, the Proposed Development would increase their consumer spending and saving potential, and decrease their reliance on certain community facilities and services, such as public assistance and health and welfare programs.

For these reasons, as well as specific reasons for each aspect of community infrastructure described below, the Proposed Development is not expected to result in any significant adverse impacts on law enforcement, criminal justice, fire protection, emergency medical services, or schools in the City of Taunton.

Police

The new employees and visitor population introduced by the Proposed Development would create additional demand for police services. In order to meet this demand, as stipulated in the IGA, the Tribe would pay a one-time cost of approximately \$2.982 million and annual costs of \$2.5 million to fund the creation of a new police substation to accommodate the increased daily population in East Taunton, the purchase of new patrol cars, and the hiring of additional officers.

It is anticipated that police protection on the Project Site would be provided by the City, as supplemented by additional services described above that the Tribe would provide through the IGA. However, if the Tribe should establish a tribal police force on the Project Site, the Tribe and City would "...negotiate in good faith for a cross-deputization and mutual aid agreement identifying the respective jurisdictional activities of the tribal police force and the City Police Department..." During special events that would be hosted at the proposed casino, the Tribe and the City would negotiate agreements to provide adequate police staffing on-site, with adequate compensation given to the City.

Some research suggests that the presence of a casino in an area may result in an increase in criminal and anti-social behavior in that area; however, a direct correlation between casino gambling and increases in local crime rates has not been definitively established.

In general, research indicates that the connection between casino gambling and crime in a community is not direct or definitive. While some studies have shown that gambling can be associated with an increase of up to 10 percent of crime in the casino host community, other research indicates that casinos actually discourage crime due the increased presence of law enforcement and security surveillance equipment.^{1,2} Research and literature on this matter suggest that further study is needed, but overall show that communities with legalized gambling at casinos are as safe as communities without casinos. Some data even indicate that in the case of Indian casinos, the increase in employment and income generated by the casino outweighs any problems that may be introduced by gambling. Though the total number of crimes can be expected to increase in a community with the introduction of a casino, this is generally linked to

¹ Grinols, Earl L. and David B. Mustard. 2006. Casinos, Crime, and Community Costs, *The Review of Economics and Statistics*, February 2006, 88(1).

² Stitt, et al. 2003. Does the Presence of Casinos Increase Crime? An Examination of Casino and Control Communities, *Crime and Delinquency*, Vol. 49, No. 2, April 2003.

the associated population increase, and does not necessarily increase the per capita crime rate.³ However, pathological gamblers are more likely to commit crimes than non-pathological gamblers, and pathological gamblers are estimated to be approximately 1.2 to 1.5 percent of the adult population.⁴ A small percentage of casino visitors residing in the local area may exhibit pathological gambling characteristics due to the easy accessibility of the casino to their places of residence or employment. In situations where this occurs, local law enforcement and local social services agencies may experience an increased demand for services.

Because the vast majority of visitors to the proposed casino would be expected to travel from communities beyond the City of Taunton, the potential law enforcement effects related to pathological gambling would be dispersed throughout a broad region reflecting the area from which visitors would be drawn. In addition, there is evidence that people who become pathological gamblers have other behavior disorders that require the attention of local agencies. It is likely that a portion of any potential pathological gamblers would be people currently served by these agencies, and therefore a portion of the demands on law enforcement agencies attributed to pathological gambling would not be new demands.

The Tribe has acknowledged that the Proposed Development may negatively affect people who suffer from problem or pathological gambling addiction disorders. The Tribe would support problem gambling education, awareness, and treatment, through a one-time contribution of \$60,000 and annual contributions of \$30,000 to a local center for the treatment of compulsive gambling. Furthermore, the Tribe would provide training to front line staff in recognizing compulsive gamblers and would make information available and accessible for such individuals seeking assistance for problem gambling.

In addition, casino visitors are expected to cause an increase in demand for traffic-related enforcement services. It is expected that most casino patrons would arrive and depart from Route 140. The Tribe has proposed a series of improvements and modifications to roadways in the area, including improvements to the Route 24/Route 140 and Route 140/Stevens Street interchanges, roadway reconstruction, median installation, sidewalk reconstruction, traffic signal updates, drainage improvements, and traffic calming measures in East Taunton. While these mitigation measures would be expected to bring traffic to acceptable levels, it is likely that traffic and automobile-related infractions and accidents would increase on Route 140 and to a lesser extent on other area road networks.

Overall, it is expected that any project-generated demand on law enforcement services in the City of Taunton would be offset by the services and payments required of the Tribe through the IGA, including: funding for a new police substation, additional officers, and police vehicles for the Taunton Police Department; establishment of a local center for treatment of compulsive gambling and specialized casino

³ Baxandall, Phineas and Bruce Sacerdote. January 13, 2005. *The Casino Gamble in Massachusetts – Full Report and Appendices*. Rappaport Institute for Greater Boston at JFK School of Economics, Harvard University.

⁴ U.S. Department of Justice, Office of Justice Programs, National Institute of Justice. July, 2004. *Gambling and Crime Among Arrestees: Exploring the Link*.

staff training related to compulsive gambling; and the presence of a Tribal police force at the proposed casino if deemed necessary and as agreed upon through the gaming compact. Therefore, no significant adverse impacts to the City's police services would result from the Proposed Development.

Criminal Justice System

For many of the same reasons described above, the Proposed Development would not result in a significant adverse impact on the criminal justice system. The most likely scenario to put a burden on the criminal justice system would be the presence of pathological gamblers, who have higher arrest rates than non-pathological gamblers. However, as explained above, pathological gamblers represent only 1.2 to 1.5 percent of the adult population. Just as the potential law enforcement effects related to pathological gambling would effectively be diffused throughout a much broader region, so too would the burden on the criminal justice system resulting from pathological gamblers. The Massachusetts District Court system handled 205,570 criminal cases in 2010; any increase resulting from the Proposed Development would represent a negligible increase in the overall caseload. In addition, the terms of the IGA requiring payment for the creation of a local center for the treatment of compulsive gambling would serve to lessen any additional burden on the criminal justice system. Overall, the Proposed Development would not result in any significant adverse impacts on the City of Taunton's criminal justice system.

Fire Protection

The Proposed Development would place additional burdens on the Taunton Fire Department (TFD) due to the increase in visitors to the area and the additional households expected as a result of the project-generated employment. According to the terms of the IGA, the Tribe would pay the City a one-time cost of \$2.14 million for Phase 1 of the Proposed Development (all casino, hotel, and infrastructure south of the rail line), a one-time cost of \$720,000 for Phase 2 (water park, hotel, and related infrastructure north of the rail line), and annual costs of \$1.5 million for fire protection infrastructure improvements. These costs would cover upgrades to the East Taunton fire station, the purchase of one additional ladder truck, and the hiring of a fire inspection official and fire officers. As the IGA is based on the estimated increased demand introduced by the Proposed Development, this provision of funding for TFD by the Tribe would offset any additional demand placed on the TFD by the Proposed Development. Therefore, the Proposed Development would not result in any significant adverse impacts to fire protection services.

Emergency Medical Services and Hospitals

The Proposed Development would introduce new worker and visitor populations to the City of Taunton, as well as new residents as a result of project-generated employment. These new visitors, residents, and employees would create new demands on existing ambulance and hospital services. The new households could create additional demand for both in-patient and outpatient (emergency room) services, while the new visitors would only create new demand for emergency room services. Overall, compared to the 7,496 households served by Morton Hospital in fiscal year 2011, the project-generated population would represent a marginal increase in demand. In Massachusetts, it can be assumed that nearly all persons will have health insurance. Therefore, use of emergency room services is expected to be lowered because of

the accessibility of preventive care through health insurance. The visitor population also could create additional demand for emergency room services, but this demand would be a small portion of the 52,794 emergency room cases handled by Morton Hospital annually. Overall, the Proposed Development would not result in any significant adverse impacts to emergency medical services and hospitals.

Schools

As discussed above, the Proposed Development would create 3,500 new jobs. It is anticipated that the majority of these jobs would be filled by existing City of Taunton and Bristol and Plymouth County residents, nearly 5 percent, or 49,516 persons, of which are unemployed. In addition to providing job opportunities to currently unemployed workers, the Proposed Development is expected to attract current residents who are under-employed or part-time workers seeking full-time jobs. The hiring of existing Taunton and area residents will have a neutral effect on schools on the basis that these individuals already are part of the affected school districts' populations, and do not represent new households. Nonetheless, it is expected that the Proposed Development staffing requirements would require certain skillsets or specialty jobs for which no local candidates exist, and that these specialized jobs may attract new employees to settle the area. As a result, it is expected that the Proposed Development would likely introduce new households to the area. While some of these households would increase demand for school seats in the Taunton Public School District, others would be broadly dispersed throughout the area and among other school districts.

The Taunton School District has seen a nearly 5 percent decrease in enrollment in the decade since 2002. Data provided by the Massachusetts Department of Elementary and Secondary Education show a 384 decline in enrollment during this period.⁵ Due to this decrease, it is unlikely that the households introduced by the Proposed Development would require any additional capital spending or hiring by the Taunton Public School District. Some of the households added would likely live in other school districts within a reasonable drive time of the Project Site, most likely within the adjacent Bristol and Plymouth Counties.

Additional demand for school seats generated by these households would be spread over several school districts and would not overburden any particular district. As discussed in **Section 7.16.4.5**, these two counties are served by a total of 317 schools. Over the past decade, the counties have experienced net loss of student population, particularly in the lower grades which have seen a decrease of 12,315 students. This decline in enrollment indicates a future capacity to accommodate additional students in existing facilities without changes in physical plant or operations. The current student teacher ratio in the Bristol and Plymouth County schools average 13.4 and 13.8, slightly lower than the statewide average of 13.9. As current upper school students graduate, the decreased number of lower school students ascending to high school would indicate more favorable student-teacher ratios if current teacher staffing levels are maintained. In addition, a portion of the households could elect to send their children to private schools.

⁵ Massachusetts Department of Elementary and Secondary Education. Taunton (02930000) 2012 Enrollment Data.

According to the terms of the IGA, the Tribe would pay the City of Taunton \$370,000 annually as increased local contribution to the Taunton School District. The Taunton School District could use these additional funds as needed based on any new burdens that result from an increased student population. For all of these reasons, the Proposed Development would not be expected to result in any significant adverse impacts on City of Taunton School District schools, or on schools in the adjacent Bristol and Plymouth County districts.

8.16.1.2 Alternative B: Reduced Intensity I

In comparison to Alternative A, Alternative B would reduce the size of the casino by 54 percent, the number of hotel rooms and parking spaces would be reduced by two-thirds, and the number of restaurant seats would be reduced by over one half. As a result, fewer employees would be needed to staff the Alternative B development, and annual visitation to the Project Site would be less than anticipated for Alternative A. Due to the decrease in the number of project-related jobs and visitors under this Alternative, demand for community services and infrastructure including police and fire protection, criminal justice system, emergency medical services and hospitals, and schools would be less compared with Alternative A. Under this Alternative, payments from the Tribe to the City of Taunton, which are based on estimated services necessitated by the project-induced demand, would be reduced in proportion to the reduction in the size of the development program. As with Alternative A, any demand generated by Alternative B on the City of Taunton community services and infrastructure would be offset by services and payments from the Tribe to the City. Like Alternative A, Alternative B is not expected to result in any significant adverse impacts on law enforcement, criminal justice, fire protection, emergency medical services, or schools in the City of Taunton.

8.16.1.3 Alternative C: Reduced Intensity II

Alternative C would have 300 fewer hotel rooms than Alternative A and would not include the water park or associated parking. Project-generated employment and visitation would be lower than with Alternative A, and a corresponding decrease in demand for community services and infrastructure would be expected. Payments from the Tribe to the City of Taunton would be reduced in proportion to the reduction in size of the development program. Like Alternative A, Alternative C is not expected to result in any significant adverse impacts on law enforcement, criminal justice, fire protection, emergency medical services, or schools in the City of Taunton.

8.16.1.4 Alternative D: No Action

Alternative D would include the full build-out and tenanting of the LUIP. The increase in Project Site jobs would be significantly less than anticipated under Alternative A, visitation to the Site would be minimal compared to Alternative A, and the demand on community services and infrastructure would be correspondingly less. Alternative D is not expected to result in any significant adverse impacts on law enforcement, criminal justice, fire protection, emergency medical services, or schools in the City of Taunton.

8.16.2 EFFECTS OF EMPLOYEES

8.16.2.1 Alternative A: Proposed Development

The homes of workers filling Proposed Development jobs are expected to be dispersed widely throughout Bristol and Plymouth counties and beyond. The project sponsors anticipate that over 75 percent of the workforce will live within 20 miles of the Project Site, with a majority of the workforce living within Bristol and Plymouth Counties, and that most of the additional employees will come from Norfolk County, MA, and smaller portions of Providence, Bristol, and Newport Counties, RI. The anticipated commuter shed is consistent with U.S. Census Bureau journey-to-work data which shows the average travel time to work for persons living in the City of Taunton, Bristol County, and the combined Bristol and Plymouth County area (a weighted average) all to be between 26 and 27 minutes (see **Table 7.16-7**).

It is anticipated that a majority of workers filling Proposed Development jobs would already be living in the area, many in the City of Taunton, and that in-migration would be minimal. The project sponsor expects to implement a recruitment program ahead of the opening of the Project, and the Tribe has committed through the IGA with the City of Taunton to work in good faith to hire local residents.

Overall, the employment demand generated by the Proposed Development in the study area can easily be met by the available labor force within Bristol and Plymouth Counties. As discussed further in **Section 8.16.4**, “Economic Benefits Analysis,” the Project is expected to generate approximately 3,500 jobs on the Project Site, with an additional 1,540 jobs created indirectly within the two-county area. As of 2011, there were approximately 49,561 unemployed persons living within Bristol and Plymouth Counties, with 2,681 living in the City of Taunton (see **Table 7.16-8**). The majority of the employment at the Proposed Development would be in the food and beverage, gaming, recreation, and hotel sectors, which would not require specific skill sets that could not be obtained through basic employee training. Therefore, it is not expected that a substantial number of new workers would migrate to the study area as a result of the Proposed Development.

Both the City of Taunton and the two-county area would experience substantial labor force benefits from operation of the Proposed Development. As shown in **Table 7.16-5** and **Table 7.16-8**, average annual employment in the City of Taunton was 28,470 in 2011 and the unemployment rate was 8.6 percent, with 2,681 unemployed persons living in the City. The 3,500 jobs introduced by the Proposed Development would increase the number of jobs in the City by 12.3 percent, and could substantially decrease the unemployment rate. In the larger two-county area, the 3,500 Proposed Development jobs would increase employment by 0.7 percent, and assuming that approximately 75 percent of the Project Site jobs would be filled by residents of the two-county area, the project would decrease the unemployment rate in the area from 9.0 percent to 8.5 percent.

It is anticipated that the limited number of workers that may move to Taunton or the broader labor shed area to work at the proposed project would be able to relocate to existing vacant housing units. As described in **Section 7.16**, in 2010 there were over 23,700 vacant year-round (not for seasonal use)

housing units in Bristol and Plymouth counties. Approximately 1,500 of those units were located in the City of Taunton. This supply of vacant housing can reasonably be expected to accommodate any in-migration that may be attributable to the proposed project.

According to industry research and employee surveys conducted at similar casino operations, casino employment opportunities attract workers due to highly competitive benefit packages, including attractive health and life insurance benefit programs, paid vacations, and disability insurance. Job security and opportunities for advancement in the operation and within the industry are also cited as attractive reasons for unemployed or “underemployed” persons (those currently in part-time or seasonal positions) to take full-time casino jobs.^{6,7,8,9} A 2007 telephone survey of 501 employees working at casinos across the country showed that the casino workers surveyed viewed their jobs favorably compared to previous jobs held. The survey findings showed that 62 percent of respondents felt that their salaries/wages were better than in previous jobs, 61 percent felt their vacation and personal time were better, and 63 percent responded that their benefits (e.g., health benefits, education) were better than in previous jobs.¹⁰

There would be no significant adverse impact on the study area’s workforce as a result of the Proposed Development.

8.16.2.2 Alternative B: Reduced Intensity I

With a smaller casino and less restaurant and hotel space, Alternative B would create fewer jobs compared with Alternative A. Both Alternatives are expected to create a range of job types appropriate for employees with varying degrees of education and training, and would draw workers from a broad commuter shed, and therefore lead to minimal in-migration of new workers into the area. With fewer jobs compared to Alternative A, labor force benefits stemming from Alternative B, including reductions in the unemployment rate in Taunton and the larger commuter shed, would be less. Like Alternative A, Alternative B would not result in a significant adverse impact on the study area’s workforce.

8.16.2.3 Alternative C: Reduced Intensity II

Alternative C would create fewer jobs than Alternative A, therefore the labor force benefits offered by Alternative C would be less than those anticipated with Alternative A. This Alternative would not result in a significant adverse impact on the study area’s workforce.

⁶ U.S. General Accounting Office. April, 2000. *Impact of Gambling: Economic Effects More Measurable than Social Effects* (GAO/GCD-00-78).

⁷ Garrett, Thomas A. August, 2003. *Casino Gambling in America and its Economic Impacts*. Federal Reserve Bank of St. Louis.

⁸ National Gambling Impact Study Commission. June 18, 1999. *National Gambling Impact Study Commission Report*.

⁹ Harrah’s Entertainment, Inc. March 14, 2003. *Capturing the Benefits of Casino Gaming: An Economic Development Initiative for Rhode Island*.

¹⁰ Peter D. Hardt Research Associates. 2007. *A Survey of Attitudes of Casino Industry Employees*. American Gaming Association.

8.16.2.4 Alternative D: No Action

Based on the standard industry assumptions of 1 employee per 1,000 square feet of industrial space and 1 employee per 250 square feet of office space, the 554,700 square feet of new or newly-tenanted (currently, built but unoccupied) industrial space introduced by Alternative D would generate approximately 555 jobs and the 29,500 square feet of office space would introduce approximately 118 new jobs. With a total of 673 new jobs, Alternative D would generate roughly 2,827 fewer direct jobs than anticipated by the implementation of Alternative A, the Proposed Development. Therefore, the labor force benefits resulting from Alternative D would be substantially less than Alternative A, though neither alternative would result in a significant adverse impact on the study area's workforce.

8.16.3 EFFECTS OF CASINO RESORT VISITORS

8.16.3.1 Alternative A: Proposed Development

Projected Visitation

The New York City market area is the single largest generator of casino visitors in America. Three other large urban centers in the northeast rank in the top twenty list of cities that generate the most casino visitation trips: Philadelphia (6th highest), Hartford-New Haven (14th) and Boston (16th).¹¹

Some of the major gaming destinations throughout the Northeast include Atlantic City in New Jersey; Foxwoods and Mohegan Sun in Connecticut; and Lincoln Park in Rhode Island. Atlantic City and the eastern Connecticut casinos represent major destinations for New York's and New Jersey's casino patrons. Atlantic City, with 12 casinos, is second only to Las Vegas as a national—if not an international—gaming and entertainment destination. It is anticipated that the Proposed Development would most directly compete for players with six casinos including Twin River Casino (Lincoln, RI), Newport Grand (Newport, RI), Region A (Metro Boston, MA), Foxwoods Casino (Ledyard, CT), Mohegan Sun Casino (Montville, CT) and Region B (Western MA).

Casino patrons customarily travel well over an hour to visit casino facilities. A national survey of casinos indicated that upwards of 91 percent of visitors traveling to casinos similar to the Proposed Development came from outside a 50 mile radius, representing at least an hour's drive.¹² Another study indicates that as many as 61.7 percent of casino patrons will travel 51-250 miles to visit a casino, with nearly 14 percent traveling over 250 miles.¹³ The proposed casino would be located within close proximity to five major urban areas. Boston, MA is located approximately 40 miles from Taunton, and Providence, RI is approximately 20 miles from Taunton. New Haven and Hartford, CT are located approximately 120

¹¹ Harrah's Entertainment, Inc. June 2006. *Harrah's Survey 2006: Profile of the American Casino Gambler*.

¹² Gerstein, Dean, et. al. April 14, 1999(a). *Analysis of the Casino Survey*. National Gambling Impact Study Commission.

¹³ Gerstein, Dean, et. al. April 14, 1999(b). *Gambling Impact and Behavior Study*. National Gambling Impact Study Commission.

miles and 100 miles, respectively, from Taunton, and most of New York City—containing the highest population of all major cities within close proximity to the Project Site—is located within 200 miles of Taunton.

Given the strength of the casino gambling market in the region, the project sponsors estimate that the Proposed Development would attract an estimated 5.3 million visitors annually. Because of the destination nature of the Proposed Development, it is expected that majority of the casino's patrons would represent new visits to Bristol County that would not otherwise occur in the absence of the Project.

According to the American Gaming Association's 2008 Survey of Casino entertainment, the group of anticipated visitors has a higher median income than the US as a whole. Casino visitors are slightly older than the overall population, 47 versus 46, and a higher percentage of casino patrons have some college education than the average member of the U.S. population.¹⁴

Off-Site Visitor Spending Patterns

The Proposed Development's introduction of an estimated 5.3 million visitors per year is expected to result in an overall gradual strengthening of the regional economy, mainly through direct spending on-site that supports the jobs and purchases of goods and services by the Proposed Development's operations. Spending by casino patrons on incidental purchases off-site in non-casino enterprises—restaurants, hotels, motels, retail establishments, etc.—are also expected to create economic benefits in the local and regional economies.

The Proposed Development is designed as a destination facility, with self-contained and integrated entertainment, dining, and lodging facilities. The experience of similar venues is that patrons come to the facility specifically to partake in the venue's offerings, and they leave for home or other vacation destinations following their visit to the facility.

Casino patrons visit casinos for the diverse and exciting entertainment experiences offered by and at the facilities; casino visits are cited as multi-purpose tourist visits during which exploration and impulsive spending occurs. However, consumer spending at casino gift shops and on-site retail establishments has not historically been a major activity of casino visitors. According to various studies cited in the *New England Casino Gaming Update 2012*, non-gaming revenue including hotels, restaurants, shops, entertainment, and other attractions tends to comprise less than a quarter of total revenue.¹⁵ Given the propensity of casino visitors to remain largely on site during their visit, spending in surrounding communities would be expected to be less so. Less than 43 percent of the visitors to Foxwoods visited the

¹⁴ American Gaming Association. 2003 *State of the States: The AGA Survey of Casino Entertainment*.

¹⁵ University of Massachusetts, Dartmouth, Center for Policy Analysis. *New England Casino Gaming Update 2012*.

on-site Foxwoods gift shops, and less than 30 percent of the Foxwoods visitors listed shopping elsewhere in Connecticut as an activity.¹⁶ While the spending potential of casino visitors is substantial, the bulk of their spending would be expected to occur within the Project Site.

Casino visitors utilizing private automobiles (as opposed to charter buses) do have the mobility to leave the site of the casino and explore surrounding communities and patronize area businesses. For example, Cape Cod's tourist industry is active and provides opportunities for casino patrons to experience other venues besides those offered at the casino, and the City of Providence is only about a half hour drive (20 miles) from Taunton. Furthermore, there are various regional historic attractions within Bristol and Plymouth Counties, such as Battleship Cove in Fall River, and Plymouth Rock, Plimoth Plantation and the Mayflower II in Plymouth, which would likely attract a small portion of future casino visitors.

For casino visitors traveling by private automobile, anticipated categories of purchases would include gasoline, oil and other automobile-related products. Purchases of gasoline, automobile-related products and snacks at existing service stations along travel routes would benefit the surrounding community.

Among the Proposed Development visitors whose spending will affect local and regional economic activity are the local residents who visit the Proposed Development. The proposed casino is expected to provide nearby residents with an alternative leisure and entertainment venue that would compete with existing local entertainment and leisure businesses. This competition would be felt by local businesses when local residents elect to visit the casino instead of visiting the leisure and entertainment venues formerly frequented. The business sectors most vulnerable to experiencing this include restaurants, bars, movie theaters, and other entertainment sector venues.¹⁷ The hospitality industry, including hotels, motels, and bed & breakfast establishments, may also experience the effects of casino hotel competition upon the completion of the 900 hotel rooms.

Communities elsewhere in America in which destination casinos have been built have experienced alterations of local consumer spending behavior through which a portion of leisure spending is shifted toward the casino amenities and away from established leisure and entertainment businesses. While this shift in local spending, known as the "substitution effect,"^{18,19,20} is expected to result in a decrease in business activity among competing businesses, the spending, insofar as it is shifted to in-casino purchases, is retained within the overall Bristol County and regional economy, and therefore this spending continues to support economic activity, such as wages and salaries, purchases, and associated taxes, within the overall local economic sphere. In addition, the spending undertaken by any casino employees newly

¹⁶ Carstensen, Fred et. al. November 28, 2000. *The Economic Impact of the Mashantucket Pequot Tribal Nation Operations on Connecticut*. Connecticut Center for Economic Analysis.

¹⁷ New Jersey Casino Control Commission. January, 1998. *Casino Gambling in New Jersey: A Report to the National Gambling Impact Commission*.

¹⁸ GAO 2000.

¹⁹ Garrett 2003.

²⁰ Taylor, Jonathan B., Matthew B. Krepps, and Patrick Wang. April, 2000. *The National Evidence on the Socioeconomic Impacts of American Indian Gaming on Non-Indian Communities*. Submitted to the Journal of Gambling Studies.

relocated to the region, and the spending incurred by new residents assuming the existing full- and part-time jobs vacated by new casino employees would represent entirely new consumer spending activity in their communities of residence and the local and regional economy, thereby further offsetting the potential negative effects of the potential consumer spending shifts.²¹

Overall, the effect of Proposed Development visitors on the local and regional economy is expected to be positive. Casino visitor spending will be highly concentrated in the casino operation, on gaming, dining, and lodging, thereby supporting the foundation of the economic activity generated by the Proposed Development's operations. Incidental spending by casino visitors is expected to result in direct economic benefits to local businesses and businesses along travel routes serving travelers, such as automobile service sector. Actual visitor spending, and particularly the potential for increased off-site visitor spending, is expected to stimulate entrepreneurial activities and overall business growth as the local economy adapts to provide attractive compliments and alternatives to the casino's attractions. The potential for negative economic activity resulting from the substitution effect of local spending shifts is expected to be offset by newly generated employee spending, as well as by the adaptation of local businesses to attract and capture the spending potential of casino employees and patrons.

8.16.3.2 Alternative B: Reduced Intensity I

Annual visitation would be substantially less under Alternative B compared with Alternative A, due to the smaller casino and associated hotel and restaurant space. Off-site visitor spending and its positive effects on area businesses would therefore be reduced compared to Alternative A. The casino developed under Alternative B, though smaller than the casino proposed under Alternative A, would still provide nearby residents with an alternative leisure and entertainment venue that would compete with existing local entertainment and leisure businesses. Neither Alternative would be expected to result in a significant adverse impact with respect to project visitors.

8.16.3.3 Alternative C: Reduced Intensity II

Annual visitation to the casino would be substantially the same under Alternatives A and C, because the casino would be the same size. However, total visitation to the Project Site would be less under Alternative C due to the lack of a water park and fewer hotel rooms compared with Alternative A. Off-site visitor spending and its positive effects on area businesses would be somewhat reduced compared to Alternative A. The casino developed under Alternative C would provide nearby residents with the same alternative leisure and entertainment venue as Alternative A, and like Alternative A, this casino would compete with existing local entertainment and leisure businesses. Neither Alternative would be expected to result in a significant adverse impact with respect to project visitors.

²¹ Rose, Adam. November 5, 1998. The Regional Economic Impacts of Casino Gambling: Assessment of the Literature and Establishment of a Research Agenda. National Gambling Impact Study Commission.

8.16.3.4 Alternative D: No Action

Annual visitation to the Project Site would be minimal under Alternative D, and visitors would be traveling to the Site for business rather than entertainment purposes. Like Alternative A, Alternative D would not result in a significant adverse impact with respect to project visitors.

8.16.4 ECONOMIC BENEFITS ANALYSIS FOR PROPOSED DEVELOPMENT

8.16.4.1 Introduction

The construction and operation of the Proposed Development would result in increased economic activity in Bristol and Plymouth Counties, and in the broader Massachusetts economy. This analysis estimates what this activity might be. The analysis first considers the effects of constructing the Project's facilities, and next considers the ongoing effects of its full-scale operations.

The construction period economic effects would stem from the direct construction spending and employment from the Project, and would also include the secondary, or indirect, economic activity generated throughout the economy by the direct construction-related spending. This indirect economic activity is often referred to as the "ripple," or multiplier effect. This analysis examines the effect of the Proposed Development in terms of employment, wages and salaries, and output generated during the construction period.

Economic benefits associated with the ongoing operation of the Proposed Development would stem from annual operational spending, on-site employment, and associated wages and salaries. To the extent that the economic activity is taxable, annual tax revenues also would be generated from the operation of the Proposed Development. Direct operational spending and employment would generate additional indirect economic benefits as employee salaries and operational funds are re-circulated through the local and Statewide economy.

Methodology

The principal economic model used to estimate the effect on the economy of constructing and operating the Proposed Development was IMPLAN (IMPact Analysis for PLANning), which was originally developed by the United States Department of Agriculture Forest Service in 1979 and was subsequently privatized by the Minnesota IMPLAN Group (MIG). The model uses the most recent economic data from sources such as the U.S. Bureau of Economic Analysis, the U.S. Bureau of Labor Statistics, and the U.S. Census Bureau to predict effects on the local economy from direct changes in spending.

The IMPLAN model contains data on 440 economic sectors, showing for any given geography how each sector affects every other sector as a result of a change in the quantity of its product or service. The economic effects of the Proposed Development, which is located in the City of Taunton, in Bristol County, are expected to be concentrated largely in an area of Southeastern Massachusetts encompassing Bristol and Plymouth Counties. The majority of Project employees are expected to live in these counties, and this is where the bulk of their wages and salaries would be spent. The analysis was therefore

conducted using a primary two-county model (Bristol and Plymouth Counties), and a secondary Massachusetts model. These models were used to estimate the total economic effect of the Proposed Development on the economies of Bristol and Plymouth Counties and Massachusetts.

Measures of Economic Impact

Using IMPLAN terminology, economic impacts are broken into three components: direct, indirect, and induced.

Direct effects represent the initial benefits to the economy of a specific new investment; e.g., a construction project or changes in employment.

Indirect effects represent the benefits generated by industries purchasing from other industries as a result of the direct investment; e.g., indirect employment resulting from construction expenditures would include jobs in industries that provide goods and services to the contractors. A direct investment triggers changes in other industries as businesses alter their production to meet the needs of the industry in which the direct impact has occurred. These businesses in turn purchase goods and services from other businesses, causing a ripple effect through the economy. The ripple effect continues until leakages from the region (caused, for example, by imported goods) stop the cycle. The sum of these iterative inter-industry purchases is called the indirect effect.

Induced effects represent the impacts caused by increased income in a region. Direct and indirect effects generate more worker income by increasing employment and/or salaries in certain industries. Households spend some of this additional income on local goods and services, such as food and drink, recreation, and medical services. Benefits generated by these household expenditures are quantified as induced effects.

The sections below present economic impacts resulting from the construction period and from annual operation of the Proposed Development.

8.16.4.2 Value of Construction

Based on preliminary estimates, the total cost for developing the Proposed Development is estimated at \$573.1 million in 2012 dollars. This cost includes hard costs (i.e., the actual construction cost), and soft costs, but excludes financing, value of land, and marketing. For the economic benefits analysis, the cost of fixtures, furniture, and equipment (FFE) (\$120.6 million) is excluded as it is assumed that FFE are imported from outside Massachusetts, and not constructed on the Project Site. Therefore, the construction cost used as the basis for this analysis is \$452.5 million.

Physical improvements to the Project Site and payroll for non-construction employees conducting work locally prior to the opening of the Project were modeled using the Bristol and Plymouth County model. As shown in **Table 8.16-1**, these costs total \$433.1 million. It is assumed that soft costs (\$19.4 million), including architectural, engineering, and legal services, would occur in Massachusetts, but outside of the two-county region.

**TABLE 8.16-1
PROPOSED DEVELOPMENT CONSTRUCTION PERIOD COSTS**

IMPLAN Sector	Description of Industry Sector	Construction Costs (Millions of 2012 dollars)	
		Bristol County and Plymouth County ⁽¹⁾	Additional Massachusetts
34	Construction of new nonresidential commercial structures	\$314.72	\$0
36	Construction of other new nonresidential structures	\$105.38	\$0
367	Legal services ²	\$0	\$1.00
369	Architectural, engineering, and related services ²	\$0	\$18.40
409	Amusement parks, arcades, and gambling industries ³	\$13.00	\$0
Total Construction Cost for IMPLAN Analysis		\$433.10	\$19.40
Notes: ¹ The construction analysis was modeled in the combined Bristol and Plymouth County area and in Massachusetts. ² Soft costs are assumed to occur within Massachusetts, outside of Bristol and Plymouth Counties. ³ Includes pre-opening payroll for casino. ⁴ For the economic impact analysis, the cost of Furniture, Fixtures and Equipment (FFE, approximately \$120.6 million) is excluded from the construction cost as it is assumed that FFE are imported from outside Massachusetts, and not constructed on the site.			
Source: Construction costs provided by the Mashpee Wampanoag Tribe			

8.16.4.3 Economic Benefits from Construction

Employment

As discussed above, construction is estimated to cost \$452.5 million, of which \$433.1 million is assumed to occur in the two-county region. As a result of the direct expenditures, direct employment from construction of the Proposed Development (including both on-site construction jobs and jobs resulting from construction soft costs such as architecture and engineering) is estimated at 2,400 person-years of employment in Massachusetts, or an average of 300 full-time equivalent jobs per year during the eight year construction period. In Bristol and Plymouth Counties, construction of the Proposed Development would generate 2,297 person-years of employment, or an average of 287 full-time equivalent jobs per year during the eight year construction period.

As discussed above, when new direct jobs are introduced to an area, those jobs lead to the creation of additional indirect and induced jobs. Indirect employment resulting from construction expenditures includes jobs in industries that provide goods and services to the contractors, and induced employment includes jobs generated by new economic demand from households spending salaries earned through the direct and indirect jobs. Based on the IMPLAN model's economic multipliers for economic sectors in Bristol and Plymouth Counties, construction of the Proposed Development would support an additional 712 person-years of indirect employment and 893 person-years of induced employment within the two-county region, bringing the total person-years of employment from construction to 3,902 (see **Table 8.16-2**). In the larger Massachusetts economy, the model estimates that construction would support 2,167

indirect and induced person-years of employment, bringing the total direct and generated jobs to 4,567, or an average of 571 full-time equivalent jobs per year during the eight year construction period.

Employee Compensation

The direct employee compensation during the construction period of the Proposed Development is estimated at \$114.20 million in Bristol and Plymouth Counties and \$123.76 million in Massachusetts (see **Table 8.16-2**). Total direct, indirect, and induced employee compensation resulting in the two-county region from construction of the Proposed Development is estimated at \$192.86 million. In the broader Massachusetts economy, total direct, indirect, and induced employee compensation from construction of the Proposed Development is estimated at \$240.01 million.

Total Effect on the Local Economy

As indicated above, the total construction cost for the development of the Proposed Development is estimated at \$452.5 million in Massachusetts, of which \$433.1 million is expected to occur in the two-county region. Based on the IMPLAN models for Bristol and Plymouth Counties and Massachusetts, the total economic activity that would result from construction of the Proposed Development is estimated at \$836.5 million in Massachusetts, of which \$708.6 million would occur in the two-county region.

**TABLE 8.16-2
ECONOMIC BENEFITS FROM CONSTRUCTION OF THE PROPOSED DEVELOPMENT**

	Bristol County and Plymouth County	Total Massachusetts
Employment (person-years)¹		
Direct (jobs associated with hard and soft costs)	2,297	2,400
Indirect (jobs in support industries)	712	826
Induced (jobs from household spending)	893	1,341
Total	3,902	4,567
Employee Compensation (Millions of 2012 dollars)		
Direct (earnings in construction)	\$ 114.20	\$ 123.76
Indirect (earnings in support industries)	\$ 32.43	\$ 48.76

**TABLE 8.16-2
ECONOMIC BENEFITS FROM CONSTRUCTION OF THE PROPOSED DEVELOPMENT
(CONTINUED)**

	Bristol County and Plymouth County	Total Massachusetts
Employee Compensation (Millions of 2012 dollars)		
Induced (earnings from household spending)	\$ 46.22	\$ 67.49
Total	\$ 192.86	\$ 240.01
Total Economic Output or Demand² (Millions of 2012 dollars)		
Direct (output from construction)	\$ 420.10	\$ 439.50
Indirect (output from support industries)	\$ 120.45	\$ 166.57
Induced (output from household spending)	\$ 168.07	\$ 230.45
Total	\$ 708.61	\$ 836.52
Notes: ¹ A person-year is the equivalent of one person working full-time for a year. Person-years of employment were estimated using construction costs for the Proposed Development, data from the US Census Bureau's Economic Census for Construction for Massachusetts, and employment and wage (ES-202) data for Bristol and Plymouth Counties from the Massachusetts Office of Labor and Workforce Development. ² The total effect on the local economy, including the sum of the cost of goods and services used to produce a product and the associated payments to workers, taxes, and profits. Sources: Construction costs provided by the project Applicant. Results derived from IMPLAN economic modeling system, construction data from the US Census Bureau Economic Census, and ES-202 data from the Massachusetts Office of Labor and Workforce Development.		

8.16.4.4 Economic Impacts from Annual Operations

This section estimates the economic benefits from annual operation of the Proposed Development on the economies of Bristol and Plymouth Counties and Massachusetts. Estimated annual operating expenditures, provided by the Applicant, were used as the primary inputs to the IMPLAN model (see **Table 8.16-3**).

**TABLE 8.16-3
PROPOSED DEVELOPMENT ANNUAL OPERATING EXPENSES**

	Annual Expense ⁽¹⁾	IMPLAN Sector	Description
Non-payroll expenses (Millions of 2012 dollars)			
Casino	\$ 64.90	409	Amusement parks, arcades, and gambling industries
Hotel	\$ 10.79	411	Hotels and motels, including casino hotels
Retail ⁽²⁾	\$ 2.32	322, 325, 327, 328, 329	Electronics and appliances; Health and personal care; Clothing and clothing accessories; Sporting goods, hobby, book and music; General merchandise
Food & Beverage	\$ 22.55	413	Food services and drinking places
Water Park	\$ 6.15	409	Amusement parks, arcades, and gambling industries
Event Center	\$ 5.69	360	Real estate establishments
Payroll Expenses (Millions of 2012 dollars)			
Annual Payroll	\$ 93.20	N/A	N/A
Total	\$ 205.60		
Notes:			
¹ Includes overhead, which was distributed proportionately among project components. Excludes expenses related to project financing.			
² Retail expenses were divided evenly among IMPLAN sectors 322, 325, 327, 328, and 329.			
Sources: Annual operating expenses provided by project applicant and Resorts World Casino New York City.			

Employment

Based on information provided by the project Applicant, direct employment for the Proposed Development is estimated at 3,500 permanent, full- and part-time jobs.

Table 8.16-4 summarizes the projected permanent employment and economic benefits from the annual operation of the Proposed Development. Total employment resulting from the operation of the Proposed Development would include jobs in business establishments providing goods and services to the Project (indirect jobs), and jobs resulting from new household spending (induced jobs). Based on the IMPLAN model's economic multipliers for Bristol and Plymouth counties, the Proposed Development would generate an additional 1,540 permanent jobs within the two-county area, bringing the total number of direct, indirect, and induced jobs from the annual operation of the development to 5,040 full- and part-time jobs within Bristol and Plymouth Counties. In the larger Massachusetts economy, the model estimates that the Proposed Development would generate 1,720 indirect and induced jobs, bringing the total number of direct, indirect, and induced full- and part-time jobs in Massachusetts to 5,220.

Employee Compensation

Based on information provided by the Tribe, direct employee compensation from the annual operation of the Proposed Development is estimated at \$93.2 million (in 2012 dollars, see **Table 8.16-4**). Total direct, indirect, and induced employee compensation resulting in Bristol and Plymouth counties from the annual operation of the completed development is estimated at \$147.57 million. In the broader Massachusetts economy, total direct, indirect, and induced employee compensation from the annual operation of the completed development is estimated at \$157.83 million.

Total Effect on the Local Economy

The direct effect on the local economy from the Proposed Development, measured as economic output or demand, is estimated at approximately \$279.6 million annually. The total economic activity that would result from operation of Proposed Development is estimated at \$511.8 million annually in Massachusetts. Of that amount, \$482.5 million annually would occur in the Bristol and Plymouth area (see **Table 8.16-4**).

**TABLE 8.16-4
PROJECTED RECURRING EMPLOYMENT AND ECONOMIC BENEFITS
FROM ANNUAL OPERATION OF THE PROPOSED DEVELOPMENT**

	Bristol County and Plymouth County	Massachusetts
Employment (Permanent Part-and Full-Time Jobs)		
Direct (On-site)	3,500	3,500
Indirect (jobs in support industries)	710	740
Induced (jobs from household spending)	830	980
Total	5,040	5,220
Employee Compensation (Millions of 2012 Dollars)		
Direct (On-site)	\$ 93.20	\$ 93.20
Indirect (earnings in support industries)	\$ 25.78	\$ 27.65
Induced (earnings from household spending)	\$ 28.59	\$ 36.98
Total	\$ 147.57	\$ 157.83
Total Economic Output or Demand¹ (Millions of 2012 Dollars)		
Direct (On-site)	\$ 279.95	\$ 279.95
Indirect (output from support industries)	\$ 98.56	\$ 103.64
Induced (output from household spending)	\$ 103.99	\$ 128.21
Total	\$ 482.50	\$ 511.80

TABLE 8.16-4
PROJECTED RECURRING EMPLOYMENT AND ECONOMIC BENEFITS
FROM ANNUAL OPERATION OF THE PROPOSED DEVELOPMENT (CONTINUED)

	Bristol County and Plymouth County	Massachusetts
Notes: ¹ The total effect on the local economy, including the sum of the cost of goods and services used to produce a product and the associated payments to workers, taxes, and profits. Source: Direct employment and direct employee compensation provided by the project Applicant and Resorts World Casino New York City. All other figures derived from the characteristics of the proposed development and the IMPLAN economic modeling system.		

8.16.4.5 Economic Benefits of Alternatives

Alternative B: Reduced Intensity I

Like Alternative A, Alternative B would result in substantial economic benefits derived from new jobs and spending on the Project Site during project construction and operation. However, the reduced development program proposed under Alternative B would result in reduced economic benefits both during construction and ongoing operation of the Project. Assuming that comparable construction techniques and materials would be utilized for Alternatives A and B, total employment, employee compensation, and economic output associated with the construction of Alternative B would decrease roughly proportionately with decreases in the square feet of particular uses compared to Alternative A. For example, the casino included in Alternative B is roughly half the size of the casino proposed in Alternative A, therefore the economic benefits associated with construction of the Alternative B casino would be approximately half of those anticipated for Alternative A. Economic benefits associated with ongoing operation of the Project would also be substantially reduced under Alternative B compared to Alternative A. Alternative B includes roughly 54 percent of the casino space, one third of the hotel rooms, 43 percent of the restaurant seats, and fewer employee dining room seats compared to Alternative A. Both non-payroll and payroll expenses associated with these uses would be less under Alternative B compared with Alternative A, and would support fewer direct, indirect and induced jobs, less employee compensation, and less economic output.

Alternative C: Reduced Intensity II

Like Alternative A, Alternative C would result in substantial economic benefits derived from new jobs and spending on the Project Site during project construction and operation. Because Alternative C does not include a water park and includes 300 fewer hotel rooms compared to Alternative A, this Alternative would result in reduced economic benefits, measured in terms of jobs, employee compensation, and economic output, both during construction and ongoing operation of the project.

Alternative D: No Action

Like Alternative A, Alternative D would not result in any significant adverse socioeconomic impacts. However, Alternative D would not produce the economic benefits derived from new jobs and spending on the Project Site. Although some employment growth would occur due to expansion of existing businesses or establishment of new commercial-industrial-warehouse businesses, economic activity under Alternative D, including jobs, employee compensation, and economic output, would be small compared with Alternative A.

8.16.5 CONCLUSIONS

None of the Alternatives analyzed above (Alternatives A, B, C, and D) would result in significant adverse socioeconomic impacts. The effect of Alternatives A, B, and C on community services and infrastructure would be similar, although the magnitude of each Alternative's effect would decrease with the size of the facilities. Payments from the Tribe to the City of Taunton would cover up-front costs necessary to improve and upgrade the City's police, fire, water, sewer, administrative, and other facilities and would pay for the City's ongoing costs resulting from the hiring of additional police, fire, administrative, and other personnel. Such payments would be reduced under Alternatives B and C, in proportion to reductions in the development program and corresponding service demands. Under Alternative D, demands on community services and infrastructure could increase marginally due to the addition of new or newly-tenanted industrial and office space on the Project Site, and any costs associated with provision of such additional service would presumably be borne primarily by the City.

All four of the alternatives analyzed would have a positive impact on the area's labor force by providing new jobs and reducing unemployment in Taunton and the larger commuter shed. Alternative A would have the greatest positive impact on the area's labor force, providing 3,500 on-site jobs and indirectly supporting another 1,540 jobs within Bristol and Plymouth counties, and the extent of the positive effect on the study area's labor force would be least under Alternative D. Similarly, visitation and related visitor spending would be greatest under Alternative A and least under Alternative D.

While all four Alternatives would result in economic benefits in the form of jobs, employee compensation, and economic output during construction and ongoing operation, these benefits would be greatest under Alternative A. Benefits during both construction and operation would generally diminish with decreases in the number of square feet developed, from Alternative A, to C, to B, to D.

SECTION 8.17

ENVIRONMENTAL JUSTICE

8.17.1 IDENTIFICATION OF DISPROPORTIONATE ADVERSE IMPACTS

None of the Development Alternatives described for the Project Site in Taunton are not expected to result in any disproportionately high and adverse effects on minority and low-income populations. Therefore, no environmental justice concerns are expected. Within the Environmental Justice Study Area, only Census Tract 6141.01 Block Group 3 is considered an Environmental Justice Community, as it has a higher proportion of minorities and population living below the poverty level in Bristol County. As shown on **Figure 7.17-1**, this area is located west of Route 24 opposite the Project Site in Taunton.

8.17.1.1 Alternative A: Proposed Development

The greatest adverse impact to this area will be the increase in traffic generated by the Proposed Development. Traffic impacts in this area will be mitigated, however. As described in **Section 8.1.3**, the Proposed Development includes improvements to Route 24/140 and Route 140/Stevens Street interchanges. The Tribe has also agreed to implement other traffic improvements that will result in improved traffic conditions. Notably, several intersections along Route 140 within the Block Group, including Mozzone Boulevard, Erika Drive, and High Street (Hart's Four Corners) will be improved as part of the mitigation program, thus improving traffic conditions within the Block Group. These improvements are described in greater detail in **Section 8.1.3.4**. These improvements would mitigate any undue traffic burden Alternative A could cause to the nearby Environmental Justice community.

8.17.1.2 Alternative B: Reduced Intensity I

Traffic would increase under all Alternatives, as described in **Section 8.1**. Because Alternative B is reduced in intensity compared to Alternative A, traffic generation would be commensurately less. As described in **Section 8.1.3.6**, Alternative B would involve volume-appropriate traffic improvements including Stevens Street in the vicinity of the Project Site entry and the Overpass Connector/Route 140 NB Ramps/Stevens Street intersection. These improvements would mitigate any undue traffic burden Alternative B could cause to the nearby Environmental Justice community.

8.17.1.3 Alternative C: Reduced Intensity II

As described in **Section 8.1.3.7**, the only difference between Alternative A and Alternative C is the removal of the water park and associated hotel from the north part of the Project Site. Because this element of the Project did not generate significant peak hour trips at any of the analysis hours, it can be assumed that adverse impacts related to traffic would be equivalent under Alternative C to those described under Alternative A. Therefore, the traffic improvements described above in **Section 8.17.1.1** would be applied to Alternative C. These improvements would mitigate any undue traffic burden Alternative C could cause to the nearby Environmental Justice community.

8.17.1.4 Alternative D: No Action

The full build-out of the parcels within and adjacent to the LUIP at the Project Site in Taunton would increase traffic to the area over time. As described in **Section 8.1.2**, under Alternative D conditions, traffic operations generally remain the same as existing conditions at nearby intersections and interchanges, with some slightly worsening conditions. It is unlikely that mitigation measures in the form of traffic improvements beyond those that have already been proposed (see **Section 8.1.2.2**) would take place under Alternative D.

8.17.2 POSITIVE IMPACTS ON ENVIRONMENTAL JUSTICE COMMUNITIES

The Proposed Development is also expected to have a positive impact on the local economy. As discussed in **Section 8.16**, the direct effect on the local economy from Alternative A, measured as economic output or demand, is estimated at approximately \$279.6 million. Furthermore, the Proposed Development is expected to add approximately 3,500 permanent full-time and part-time jobs. This would be a positive impact for the low-income community because these positions, even lower wage positions, would increase the market demand for labor and the number of jobs available in the community. As described in **Section 8.16.4.5**, other Development Alternatives would also be expected to have positive, albeit smaller, impacts on the economy and job creation.

As described in **Section 5.4** of this DEIS, the Mashpee Wampanoag Tribe qualifies as an Environmental Justice Community. **Section 3.2** describes the anticipated positive impacts to the Tribe of the taking of land in Taunton into federal trust and the development of a destination resort casino. Among these positive impacts, the proposed casino development would create many employment opportunities for Tribal members and would generate revenues to support Tribal programs that serve Tribal members. The employment opportunities described above would be open to Tribe members, potentially alleviating the nearly 50 percent unemployment rate the Tribe currently suffers. Gaming revenue would support Tribal investment in housing and healthcare, which currently represent great needs among Tribe members as the percentage of Wampanoag in poor health has been shown to be two times higher than the general Massachusetts adult population, and there is an identified unmet rental housing need for approximately 100 families (15 percent of the population). Gaming revenues and trust lands would also allow the Tribe to adequately preserve its community and cultural history through cultural site upkeep and investment in cultural education programs. The establishment of gaming on the Project Site would provide beneficial income to the Mashpee Wampanoag Tribe Environmental Justice Community.

SECTION 8.18

SUSTAINABILITY

8.18.1 INTRODUCTION

The Mashpee Wampanoag Tribe has a strong history and tradition of careful use and conservation of natural resources. The Tribe is committed to constructing and operating the proposed casino and ancillary facilities in an environmentally friendly sustainable manner. This section describes some of the sustainable design features that will be incorporated into the overall design and operation of the Project.

The Project's location in an urban setting and at an active industrial park will allow it to have only minimal impact on existing infrastructure. Because of the Project Site's proximity to mass transit as well as vehicular access to highways, the proposed destination resort casino supports the objectives of smart growth (i.e., new development at existing nodes of excellent transportation facilities).

Energy conservation and other sustainable design measures will be integral parts of the proposed project. The buildings will employ, where possible, energy and water efficient features for plumbing, mechanical, electrical, architectural, and structural systems and assemblies. Sustainable design elements relating to building energy management systems, lighting, recycling, conservation measures, regional building materials, and clean construction vehicles will be included, as practicable.

The Tribe is implementing standards for design and sustainability, similar to those in place for the Project's locality. The Tribe has adopted the ICC's 2009 International Building Code as their Code standard, and is reviewing other standards adopted by the Commonwealth of Massachusetts.

8.18.2 LEADERSHIP IN ENERGY AND ENVIRONMENTAL DESIGN

Leadership in Energy and Environmental Design (LEED) is a building rating system developed by the U.S. Green Building Council (USGBC). The LEED rating system is designed to assess a building project's siting, design, and operation and to provide a rating or score that is useful for comparing projects in terms of their overall sustainability. While the Tribe has not yet determined whether it will seek official LEED Certification for the Proposed Development, the LEED rating system provides a useful tool for assessing the Project's sustainability.

This section provides a preliminary LEED Checklist for the Project, identifying credits that would be attainable under Alternative A, Alternative B, or Alternative C. As shown on the Checklist, as the design is currently envisioned, it would be eligible to receive LEED Certification. The casino and related facilities are still in the early stages of design and it is not yet known whether many of the LEED credits will be attainable. As the design of the Project progresses, the Tribe will continue to review the design against the LEED criteria and will strive to construct and operate the facility in an environmentally friendly manner. For each LEED prerequisite and credit identified as a goal by "yes" on the LEED Checklist, **Section 8.18.3** provides a brief description of the implementation measures to the extent that they are defined at this stage of design.

8.18.3 ALTERNATIVE A: PROPOSED DEVELOPMENT

8.18.3.1 Sustainable Sites

Sustainable Sites, Prerequisite 1, Construction Activity Pollution Prevention:

Alternative A (the Proposed Development) will include a full erosion and sedimentation control program. This program will include a Stormwater Pollution Prevention Plan (SWPPP) that describes how to protect the existing stormwater collection system during construction. See **Section 8.2**.

Sustainable Sites, Credit 4.1, Alternative Transportation - Public Transportation Access:

The Project Site is located within 0.25-mile walking distance of one or more stops for two or more regional public bus services: Dattco (11 daily trips)/ Bloom Bus Service (Limited schedule). In addition, in the future, there is the potential for the Project Site to be served by a nearby station planned as part of the State's South Coast Rail Project which will establish commuter rail service between Boston and New Bedford/Fall River. The proximity of the Proposed Development to public transportation fulfills the LEED credit requirement and helps avoid pollution from automobile usage and reduce parking demand.

Sustainable Sites, Credit 5.1, Site Development – Protect or Restore Habitat:

To conserve existing natural areas to provide for new habitat and biodiversity, the Proposed Development will protect a minimum of 50 percent of the total site area (excluding the building footprints).

Sustainable Sites, Credit 5.2, Site Development – Maximize Open Space:

To promote diversity by providing a high ratio of open space to development footprint, the Project's open space adjacent to the building footprint will exceed the area of the building footprint, and will likely exceed the local zoning requirement by 40 percent (were local zoning to apply).

Sustainable Sites, Credit 6.1, Stormwater Design: Quantity Control:

The Project Site will be designed to implement a stormwater management plan which protects receiving stream channels from excessive erosion through a stream channel protection strategy and quantity control strategy. See **Section 8.3** for a full description of the proposed stormwater management system.

Sustainable Sites, Credit 7.1, Heat Island Effect – Non-Roof:

The Proposed Development will follow the guidance of Option 2 whereby a minimum of 50 percent of parking spaces will be under cover – either underground, under roof or under a building. Any roof used to cover the parking will have a solar reflectance index of at least SRI-29 or will be a vegetated green roof. Much of the new paving material will also have a Solar Reflectance Index (SRI) of at least 29.

Sustainable Sites, Credit 7.2, Heat Island Effect - Roof:

The Proposed Development will follow the guidance of Option 3 whereby roof surfaces will have a combination of high-albedo roof membrane and vegetated green material to meet the credit requirements.

Sustainable Sites, Credit 8, Light pollution reduction:

The Proposed Development will be designed to implement automatic lighting controls and maintain lighting power densities as required to implement the sustainable design requirements of this section.

8.18.3.2 Water Efficiency**Water Efficiency, Prerequisite 1, Water Use Reduction 20 Percent:**

The Proposed Development will employ strategies that in aggregate will achieve a minimum 20 percent reduction in water use compared to the water use baseline calculated for the Project Site.

Water Efficiency, Credit 1.1, Water Efficient Landscaping:

Landscape design on the Project Site will limit, if not eliminate the need for, the use of potable water for landscape irrigation via the use of appropriate plant species and planting density, and the use of grey water and retained stormwater, in addition to high-efficiency irrigation systems. Irrigation area is also very limited overall in the development.

Water Efficiency, Credit 1.3, Water Use Reduction: (Points in question)

The Proposed Development will be designed to use low flow fixtures and devices to attain as high a use efficiency as possible for the application proposed. Based on criteria for this use group, it is unknown whether the 30 percent reduction required as a minimum by USGBC will be attained.

8.18.3.3 Energy and Atmosphere**Energy & Atmosphere, Prerequisite 1, Fundamental Commissioning of Building Energy Systems:**

Building systems will be commissioned in a manner which would be in accordance with the USGBC LEED requirements. The commissioning services provided will include the Owner's Project Requirements (OPR) and Basis of Design (BOD) documents, development of a commissioning plan, incorporation of a commissioning specification section into the construction documents, and verification through startup observation and functional testing that the installed systems are operating in accordance with the OPR, BOD, and construction documents. The aforementioned services will apply to the following commissioned systems: heating, ventilation, and air conditioning (HVAC); lighting and audio controls, domestic hot water systems, and food service equipment.

Energy & Atmosphere, Prerequisite 2, Minimum Energy Performance:

The Proposed Development will be designed to meet or exceed the required energy usage improvement dictated by the prerequisite requirements for the building type.

Energy & Atmosphere, Prerequisite 3, Fundamental Refrigerant Management:

The Proposed Development will specify equipment and systems with zero chlorofluorocarbon (CFC)-based refrigerants for HVAC&R systems and food service equipment.

Energy & Atmosphere, Credit 1, Optimize Energy Performance:

The Proposed Development will be designed with the goal of exceeding the ASHRAE 90.1-2007 Energy Standard by 20 percent. This will be demonstrated with either whole-building energy simulations or prescriptive compliance paths for each of the different building types.

Energy & Atmosphere, Credit 3, Enhanced Commissioning:

In addition to the commissioning practices that will be implemented under the Prerequisite, the requirements for enhanced commissioning per the LEED credit will be followed. An independent third-party commissioning agent will perform the services.

Energy & Atmosphere, Credit 4, Enhanced Refrigerant Management:

Refrigerants, for the HVAC and food service equipment will be selected based on their capacity to minimize the impact of ozone depletion and contribution to climate change.

8.18.3.4 Materials and Resources**Materials & Resources, Prerequisite 1, Storage and Collection of Recyclables:**

Recycling is a large concern of the gaming industry. Areas that serve the facility will be provided for the collection and storage of paper, corrugated cardboard, glass, plastics and metals.

Materials & Resources, Credit 2, Construction Waste Management:

The Tribe will implement a Construction Waste Management Plan to ensure that a minimal amount of waste debris is disposed of in landfills and to pursue the goal of diverting at least 75 percent of construction-related waste from landfills.

Materials & Resources, Credit 7, (Credit 6 for C&S), Certified Wood:

To encourage environmentally responsible forest management, the Proposed Development will be designed utilizing a minimum of 50 percent of wood-based materials and products that certified according to the Forest Stewardship Council's criteria.

8.18.3.5 Indoor Environmental Quality**Indoor Environmental Quality, Prerequisite 1, Minimum IAQ Performance:**

The mechanical systems in the buildings will be designed to comply with the ASHRAE 62.1-2007 Ventilation Standard for indoor air quality.

Indoor Environmental Quality, Prerequisite 2, Environmental Tobacco Smoke Control:

Smoking will be permitted in designated areas only, and signage will be provided to inform patrons and employees of restrictions. Designated areas will be well marked, and separated to meet guidelines which permit this standard to be achieved.

Indoor Environmental Quality, Credit 3.1, Construction IAQ Management Plan – During Construction:

The Proposed Development will implement a Construction Indoor Air Quality Management Plan (CIAQMP) per the LEED requirements to improve the indoor air quality during construction and occupancy.

Indoor Environmental Quality, Credit 3.2, Construction IAQ Management Plan – Before Occupancy: (Point in question)

The Proposed Development will develop and implement an IAQ management plan after all finishes have been installed and the building cleaned before occupancy. The only question in implementing this plan involves the high cost of testing based on the number of rooms in the hotels, and therefore it may not be approved for implementation in the hotels. Therefore, the item is ‘in question’.

Indoor Environmental Quality, Credit 4.1, Low-Emitting Materials – Adhesives & Sealants:

To reduce indoor air contaminants, the Proposed Development will specify and utilize interior adhesives and sealants that comply with the South Coast Air Quality Management District (SCAQMD) Rule #1168 and Green Seal Standard.

Indoor Environmental Quality, Credit 4.2, Low-Emitting Materials – Paints & Coatings:

To reduce indoor air contaminants, all paints and coatings applied inside the building envelope will comply with the Green Seal Standard GS-11 for paints and primers, Green Seal Standard GS-03 for anti-corrosive paints, and the SCAQMD Rule #1113 for wood finishes, stains, and sealers.

Indoor Environmental Quality, Credit 4.3, Low-Emitting Materials – Flooring Systems:

To reduce indoor air contaminants, all flooring systems will comply with the appropriate low VOC standard for carpet, carpet cushion, carpet adhesive, hard surface flooring, floor sealers, stains and finishes, tile setting adhesives, and grouts.

Indoor Environmental Quality, Credit 4.4, Low-Emitting Materials – Composite Wood and Agrifiber Products:

To reduce indoor air contaminants, all composite wood and agrifiber products used inside the building will not contain added urea-formaldehyde resins.

Indoor Environmental Quality, Credit 5, Indoor Chemical and Pollutant Source Control:

To reduce hazardous particulates and indoor air contaminants, the Proposed Development will specify walk-off systems at entries, and filtration media on air handling equipment to meet the requirements of this section.

Indoor Environmental Quality, Credit 6.1, Controllability of Systems - Lighting:

Although lighting controls are a normal part of specifications for this type of project in the current market, the facility will operate 24 hours per day, and will not realize the true benefit in 90 percent of the areas as mandated by the USGBC guideline. This lighting would service administrative and back-of-house areas well, as well as hotel rooms, but the casino gaming areas and most public areas require higher levels of lighting to maintain public safety in a 24-hour operation. Therefore, this point is not yet determined.

Indoor Environmental Quality, Credit 6.2, Controllability of Systems – Thermal Comfort:

Although comfort controls are a normal part of specifications for this type of project in the current market, the facility will operate 24 hours per day, and will not realize the true benefit in 50 percent of the areas as mandated by the USGBC guideline. This comfort control system would service administrative and back-of-house areas well, as well as hotel rooms, but the casino gaming areas and most public areas require higher levels of lighting to maintain public safety in a 24 hour operation. Therefore, this point is not yet determined.

Indoor Environmental Quality, Credit 7.1, Thermal Comfort - Design:

The design incorporates design of HVAC systems and building envelope to meet the requirements of ASHRAE Standard 55-2004, as recommended by the USGBC guideline.

Indoor Environmental Quality, Credit 7.2, Thermal Comfort - Verification:

The design incorporates design of HVAC systems and building envelope to meet the requirements of ASHRAE Standard 55-2004, and will incorporate monitoring systems to ensure that building performance meets the desired comfort criteria. A thermal comfort survey will be completed within 6 to 18 months after occupancy.

Indoor Environmental Quality, Credit 8.1, Daylight and Views - Daylight:

The design incorporates criteria to meet Option 4 – Combination method for calculating minimum daylight illumination levels in at least 75 percent of all regularly occupied spaces to meet the requirements of this section. Due to the need to maintain security in the casino gaming areas through the use of security cameras, this point may not be attainable, as verification of camera operations is required based on the infusion of higher levels of daylighting into casino gaming areas. It is anticipated that this area will not be approved for high levels of daylighting.

Indoor Environmental Quality, Credit 8.2, Daylight and Views - Views

The design incorporates a large amount of glazed area, and is expected will meet this requirement for all areas except the casino gaming area based on the issue described above in Credit 8.1 as it pertains to meeting the Proposed Development's requirement for camera security. Therefore, this point is in question.

8.18.3.6 Innovation and Design Process

Innovation In Design, Credits 1.1-1.5:

The Tribe could achieve several credits for Innovation and Exceptional Performance. These will be defined during the design process for the buildings and the Project Site.

Innovation In Design, Credit 2.0, LEED Accredited Professional:

To support and encourage the design integration required by the LEED process, the Project team includes several LEED Accredited Professionals (AP).

8.18.3.7 Regional Priority Credits

Regional Priority, Credits 1.1-1.4:

The Proposed Development will pursue several Regional Priority Credits for this location, to address geographically specific environmental priorities. The Regional Priority Credits for which this project is eligible are Sustainable Sites Credit 6.1 – Stormwater Design – Quality Control, Credit 7.2 – Heat Island Effect – Roof; Energy and Atmosphere Credit 2 – On-Site Renewable Energy; and Materials and Resources Credit 1.1 Building Reuse – Maintain Existing Walls, Floors and Roof. The available credits will be further defined and integrated during the design process.

8.18.4 ALTERNATIVE B: REDUCED INTENSITY I

All LEED Checklist items identified as achievable or under consideration for Alternative A in **Section 8.18.3** would apply under Alternative B (Reduced Intensity I).

8.18.5 ALTERNATIVE C: REDUCED INTENSITY II

All LEED Checklist items identified as achievable or under consideration for Alternative A in **Section 8.18.3** would apply under Alternative C (Reduced Intensity II).

8.18.6 ALTERNATIVE D: NO ACTION

The Project Site in Taunton includes parcels within and adjacent to the Liberty & Union Industrial Park. Under Alternative D, as described previously, these parcels would not be taken into trust by the Federal government on behalf of the Tribe, but rather would continue to be built out over time into a set of one- to two-story buildings to be purchased or leased for commercial, industrial, or warehouse use. Developers of these new buildings under Alternative D may or may not elect to pursue USGBC LEED Standards for Core & Shell or New Construction.



LEED 2009 for New Construction and Major Renovations

Project First Light - Mashpee Wampanoag Tribe

Project Checklist

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☐ ☐ ☐ Sustainable Sites Possible Points: 26

Y	?	N		
Y			Prereq 1	Construction Activity Pollution Prevention
		N	Credit 1	Site Selection
		N	Credit 2	Development Density and Community Connectivity
		N	Credit 3	Brownfield Redevelopment
Y			Credit 4.1	Alternative Transportation—Public Transportation Access
	?		Credit 4.2	Alternative Transportation—Bicycle Storage and Changing Rooms
		N	Credit 4.3	Alternative Transportation—Low-Emitting and Fuel-Efficient Vehicles
	?		Credit 4.4	Alternative Transportation—Parking Capacity
Y			Credit 5.1	Site Development—Protect or Restore Habitat
Y			Credit 5.2	Site Development—Maximize Open Space
Y			Credit 6.1	Stormwater Design—Quantity Control
		N	Credit 6.2	Stormwater Design—Quality Control
Y			Credit 7.1	Heat Island Effect—Non-roof
Y			Credit 7.2	Heat Island Effect—Roof
Y			Credit 8	Light Pollution Reduction

☐ ☐ ☐ Water Efficiency Possible Points: 10

Y			Prereq 1	Water Use Reduction—20% Reduction
Y			Credit 1	Water Efficient Landscaping
		N	Credit 2	Innovative Wastewater Technologies
	?		Credit 3	Water Use Reduction

☐ ☐ ☐ Energy and Atmosphere Possible Points: 35

Y			Prereq 1	Fundamental Commissioning of Building Energy Systems
Y			Prereq 2	Minimum Energy Performance
Y			Prereq 3	Fundamental Refrigerant Management
Y			Credit 1	Optimize Energy Performance
Y			Credit 2	On-Site Renewable Energy
Y			Credit 3	Enhanced Commissioning
Y			Credit 4	Enhanced Refrigerant Management
Y			Credit 5	Measurement and Verification
		N	Credit 6	Green Power

☐ ☐ ☐ Materials and Resources Possible Points: 14

Y			Prereq 1	Storage and Collection of Recyclables
Y			Credit 1.1	Building Reuse—Maintain Existing Walls, Floors, and Roof
		N	Credit 1.2	Building Reuse—Maintain 50% of Interior Non-Structural Elements
Y			Credit 2	Construction Waste Management
		N	Credit 3	Materials Reuse

Materials and Resources, Continued

Y	?	N		
Y			Credit 4	Recycled Content
Y			Credit 5	Regional Materials
		N	Credit 6	Rapidly Renewable Materials
Y			Credit 7	Certified Wood

☐ ☐ ☐ Indoor Environmental Quality Possible Points: 15

Y			Prereq 1	Minimum Indoor Air Quality Performance
Y			Prereq 2	Environmental Tobacco Smoke (ETS) Control
Y			Credit 1	Outdoor Air Delivery Monitoring
Y			Credit 2	Increased Ventilation
Y			Credit 3.1	Construction IAQ Management Plan—During Construction
	?		Credit 3.2	Construction IAQ Management Plan—Before Occupancy
Y			Credit 4.1	Low-Emitting Materials—Adhesives and Sealants
Y			Credit 4.2	Low-Emitting Materials—Paints and Coatings
Y			Credit 4.3	Low-Emitting Materials—Flooring Systems
Y			Credit 4.4	Low-Emitting Materials—Composite Wood and Agrifiber Products
Y			Credit 5	Indoor Chemical and Pollutant Source Control
	?		Credit 6.1	Controllability of Systems—Lighting
	?		Credit 6.2	Controllability of Systems—Thermal Comfort
Y			Credit 7.1	Thermal Comfort—Design
Y			Credit 7.2	Thermal Comfort—Verification
	?		Credit 8.1	Daylight and Views—Daylight
	?		Credit 8.2	Daylight and Views—Views

☐ ☐ ☐ Innovation and Design Process Possible Points: 6

Y			Credit 1.1	Innovation in Design: Specific Title
Y			Credit 1.2	Innovation in Design: Specific Title
			Credit 1.3	Innovation in Design: Specific Title
			Credit 1.4	Innovation in Design: Specific Title
			Credit 1.5	Innovation in Design: Specific Title
			Credit 2	LEED Accredited Professional

☐ ☐ ☐ Regional Priority Credits Possible Points: 4

Y			Credit 1.1	Regional Priority: Specific Credit
			Credit 1.2	Regional Priority: Specific Credit
			Credit 1.3	Regional Priority: Specific Credit
			Credit 1.4	Regional Priority: Specific Credit

☐ ☐ ☐ Total Possible Points: 110

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 to 110

SECTION 8.19

CONSTRUCTION

8.19.1 INTRODUCTION

This section outlines the proposed construction schedule and sequence for the development of the Project Site. It also provides an evaluation of the potential construction period impacts associated with the development of the proposed casino and ancillary facilities and identifies the measures that will be taken to avoid, minimize mitigate construction related impacts on the Project Site, on adjacent roadways and on adjacent land.

8.19.2 CONSTRUCTION SCHEDULE AND APPROACH

8.19.2.1 Alternative A: Proposed Development

The Tribe anticipates that site construction of Alternative A (the Proposed Development) will begin upon receipt of applicable permits and will take place in phases over approximately six years. The phased development program will allow the Tribe to open the Proposed Development for gaming and dining approximately ten months into construction, while continuing construction and opening additional phases of the Project, including hotels and the water park, over time.

The on-site program for the Proposed Development is organized into four construction phases: Phase 1 – subdivided into 1A and 1B, consisting of all gaming and restaurant space, surface parking, and a parking garage of approximately 4,431 spaces; Phase 2, the first 300-room casino hotel; Phase 3, the second 300-room casino hotel; and Phase 4, the water park and related facilities located north of the rail line.

Multiple subcontractors having different responsibilities will be on-site concurrently. The casino/resort buildings will be under the control of the Construction Manager (CM). The CM will be responsible for coordinating the work of individual subcontractors and for ensuring that mitigation measures are in place to address each of the impacts of the Project construction as needed.

The parking garage will be constructed under a separate contract between the Tribe and a design/build contractor. The design/build contractor will ensure that mitigation measures are in place for this component of the Project.

The scope of the Proposed Development also includes construction work off-site, including that associated with bringing utilities to the Project Site and improvements to off-site roadways. Off-site roadway and infrastructure work will take place concurrently with on-site construction. This work will be performed by smaller local contractors to ensure the maximum creation of jobs and local participation in the Project.

A summary construction schedule is provided below as **Table 8.19-1**.

**TABLE 8.19-1
ALTERNATIVE A ANTICIPATED CONSTRUCTION SCHEDULE BY PHASE**

Phase	Anticipated Construction
Phase 1A	April 2014 - January 2015
Phase 1B	July 2015 - June 2016
Phase 2	July 2016 - December 2017
Phase 3	January 2018 - June 2019
Phase 4	TBD

8.19.2.2 Alternative B: Reduced Intensity I

Alternative B (Reduced Intensity I) would include a reduced casino facility compared to that described under Alternative A. Specifically, Alternative B would eliminate construction Phase 1B, Phase 2, and Phase 3 described above. It would include Phase 1A and Phase 4.

The construction of Alternative B would begin upon receipt of applicable permits and would take place in phases over approximately two years. The phased development program would allow the Tribe to open the casino and ancillary facilities under Phase 1A for gaming and dining approximately ten months into construction, while continuing construction and opening the water park at a later date.

As under Alternative A, multiple subcontractors having different responsibilities would be on-site concurrently under Alternative B. The casino building would be under the control of the CM, while the parking garage would be under a separate contract between the Tribe and a design/build contractor.

Off-site roadwork under Alternative B would be reduced compared to Alternative A, as described in **Section 8.1.3**. This work would take place concurrently with on-site construction and would be performed by smaller local contractors.

A summary construction schedule is provided below as **Table 8.19-2**.

**TABLE 8.19-2
ALTERNATIVE B ANTICIPATED CONSTRUCTION SCHEDULE BY PHASE**

Phase	Anticipated Construction
Phase 1A	April 2014 - January 2015
Phase 1B	NA
Phase 2	NA
Phase 3	NA
Phase 4	TBD

8.19.2.3 Alternative C: Reduced Intensity II

Alternative C (Reduced Intensity II) would include Phase 1A, Phase 1B, Phase 2, and Phase 3 as described under Alternative A, but would eliminate the proposed water park and ancillary facilities in Phase 4.

The construction of Alternative C would begin upon receipt of applicable permits and would take place in phases over approximately five years. The phased development program would allow the Tribe to open the casino and ancillary facilities under Phase 1A for gaming and dining approximately ten months into construction, while continuing construction and opening additional phases of the Project over time.

As under Alternative A, multiple subcontractors having different responsibilities would be on-site concurrently under Alternative C. The casino building would be under the control of the CM, while the parking garage would be under a separate contract between the Tribe and a design/build contractor.

Off-site roadwork under Alternative C would include the same improvements proposed under Alternative A, as described in **Section 8.1.3**. This work would take place concurrently with on-site construction and would be performed by smaller local contractors.

A summary construction schedule is provided below as **Table 8.19-3**.

**TABLE 8.19-3
ALTERNATIVE C ANTICIPATED CONSTRUCTION SCHEDULE BY PHASE**

Phase	Anticipated Construction
Phase 1A	April 2014 - January 2015
Phase 1B	July 2015 - June 2016
Phase 2	July 2016 - December 2017
Phase 3	January 2018 - June 2019
Phase 4	NA

8.19.2.4 Alternative D: No Action

Alternative D (No Action) could involve the build-out of the Project Site under one or more property owners, and therefore does not have a comprehensive construction schedule or management plan. A specific schedule for constructing the approximately 487,000 square feet of new building space described in **Section 4.3.5** cannot be projected due to its dependence on market forces as well as the specifications of developers' plans. If the new buildings and addition are planned in the low-rise, warehouse style of the existing buildings on the Project Site, it can be assumed that construction of each would take less than one year.

8.19.3 CONSTRUCTION METHODOLOGY

8.19.3.1 Alternative A: Proposed Development

On-Site Work

Site Preparation

Initial construction activities for the Proposed Development will include mobilization of field offices and equipment and the initiation of site preparation. Initial site preparation activities include installation of sedimentation control fencing, hay bales and other erosion control measures. The detailed placement and performance specifications for these will be established in the comprehensive Storm Water Pollution Prevention Plan (SWPPP). A more detailed description of the SWPPP and activities is included in **Section 8.19.4.1**. Construction fencing and access gates will be installed to secure the Project Site. Initial on-site activities will also include the construction of a truck wash to prevent vehicles from tracking dirt onto off-site roadways. A stabilized construction exit and a designated truck wash-down area will be constructed at the vehicle gate entrances.

Site Grading

Once the erosion control measures are in place, the “stripping” of topsoil will begin. Topsoil will be stripped and stockpiled on-site for reuse in berms and landscaped areas on the Project Site. Multiple areas on the Project Site will be designated for temporary stockpiling. Grading cuts and fills will begin following the stripping of topsoil. It is anticipated that foundation construction could begin 20 days after the start of site grading.

Building Construction

Phase 1A – Gaming, Restaurant, and Ancillary Facilities

The proposed service road from Stevens Street to O’Connell Way, described further in **Section 8.19.4.1**, will be constructed immediately to accommodate truck traffic through the Project Site. All construction workers will park off-site and be shuttled to the Project Site.

Approximately six weeks after the start of site work, the sub-grade will be sufficiently established to begin construction of the building in Phase 1A. This building is proposed to be located at the current site of 60 O’Connell Way. Construction of the one-story casino building, which will also house the food court venues, buffet, bar/lounge, and employee dining room, will commence as soon as sub-grade is established.

Concurrently with the start of casino construction, construction of the five-story parking garage will begin. The intent is to complete a parking garage of approximately 3,000 spaces within the same timeframe as the Phase 1A gaming building, in order to provide parking for patrons when the Phase 1A facilities are ready to open.

Phase 1B – Additional Gaming, Restaurant, and Ancillary Facilities

Phase 1B will involve the expansion of gaming, restaurant, and other guest facilities to the site of the building currently located at 50 O’Connell Way. It will also include the expansion of the five story parking garage to a total of approximately 4,430 spaces.

Phase 1A will be open to patrons during the construction of Phase 1B. Measures will be taken to separate construction and patron traffic. As with Phase 1A, all construction workers will park off-site and be shuttled to the Project Site. Patron entrances to the operating casino will be separate from construction work access points.

Phase 2 – First Casino Hotel

The 300-room Phase 2 hotel will be constructed with a structured steel frame and concrete foundation. All infrastructure and utilities to support the Phase 2 hotel will be put in place with the construction of Phase 1A. As with Phase 1A and Phase 1B, all construction workers will park off-site and be shuttled to the Project Site. Truck access will be from the newly constructed connector from Stevens Street. Construction of Phase 2 will take place over 18 months.

Phase 3 – Second Casino Hotel

The 300-room Phase 3 hotel will initiate construction immediately upon completion of Phase 2. The building will be constructed with a structured steel frame above the Phase 1B podium. All infrastructure and utility support will be in place in earlier phases of the Project. Construction workers will continue to park off-site and be shuttled to the Project Site. Procedures will be put in place to protect patrons from construction activities. Truck access to the Project Site will be from the service road. Construction of Phase 3 will take place over 18 months.

Phase 4 – Water Park and Ancillary Facilities

The schedule for the Phase 4 water park and 300-room hotel is yet to be determined. The Project will consist of a 25,000 square foot water park, 300-room hotel, and 500-vehicle parking lot. Truck access will be from O'Connell way via the service road. All procedures in place in previous phases to mitigate construction impacts will be put in place during Phase 4.

Traffic Improvements

The Tribe anticipates that construction of off-site traffic improvements will begin upon receipt of applicable local, state, and federal permits and will last approximately 12 months. As described in **Section 8.1.3.4**, the proposed off-site traffic improvements for Alternative A include widening and signalization of Stevens Street at O'Connell Way, upgrades to the existing signal at Route 140/Stevens Street, a new on-ramp from Stevens Street to Route 140 NB, capacity improvements to Route 140 between Stevens Street and Route 24, improvements to capacity and operations at the Route 24 interchange with Route 140, improvements to signals on Route 140 west of Route 24, improvements to various East Taunton neighborhood intersections, and upgrades to signals throughout Taunton to prioritize emergency response to the Project.

It is assumed that roadway improvements will take place within the same general timeframe as on-site construction. In the event that the on-site construction timeframe has to be altered, the timeframe of each roadway improvement would be coordinated such that the general sequencing remained intact to ensure that the construction was performed efficiently with minimum impacts to the local area.

Traffic management plans (TMPs) will be developed as part of the final engineering design and will conform to the required standards. Techniques to minimize impacts will include:

- Maintenance of traffic at all times during construction;
- Police detail traffic control, as necessary, during construction;
- Establishment of designated truck routes for construction vehicles designed to avoid residential areas to the greatest extent possible; and
- Scheduling of truck trips during off-peak traffic periods to avoid conflicts during school arrival and departure periods, and during other congested times of the day.

Water Main and Sewer Extension

Off-site water main and sewer work will be required under the Proposed Development.

In addition to on-site construction of a 12-inch diameter water main to deliver water through the Project Site, the Proposed Development will involve replacement of the water main along Stevens Street. Under the Proposed Development, a 16-inch diameter water main will be installed along Stevens Street between the Project Site entrance at O'Connell Way and Pinehill Street. This new water main will replace the existing 12-inch water main along the same route. This water main replacement will continue on Pinehill Avenue between Stevens Street and Middleboro Avenue. Installation of this new water main will require temporary construction work along one side of the street and the digging of a trench at least five feet wide along the water main route. This off-site construction will be limited to the hours of 7:00 AM to 3:30 PM, Monday through Friday. Plans for this work are shown on **Figure 8.7-1**.

Because building construction will occur on land north of the rail line, a new water main connection will be required to connect the existing 24-inch diameter water main on Middleboro Avenue to the new 12-inch water main on the Project Site. This construction will take place at the emergency access point from the Project Site on Middleboro Avenue. It will be temporary, limited to one side of the street, and limited to the hours of 7:00 AM to 3:30 PM, Monday through Friday.

Demands on the wastewater system will require similar work on-site and off-site. To connect the casino pumping station to the City of Taunton wastewater services, a six-inch diameter force main will be installed from the Project Site onto and along Stevens Street, and along the Galleria Mall Overpass, and along County Street (Route 140) (see **Figure 8.8-1**). Like water main installation, this force main will require temporary construction work along one side of the street and the digging of a trench four feet wide along the route. This off-site construction will be limited to the hours of 7:00 AM to 3:30 PM, Monday through Friday.

Because building construction will occur on land north of the rail line, an additional new pumping station and water main will be constructed for the water park. To connect the water park pumping station to City wastewater services, a four-inch diameter force main will be installed from the Project Site to connect with an existing force main on Middleboro Avenue. This construction will take place at the location of the site's emergency access point (see **Figure 8.8-1**). It will be temporary, limited to one side of the street, and limited to the hours of 7:00 AM to 3:30 PM, Monday through Friday.

These off-site improvements related to the Project's utility requirements are the responsibility of the Tribe under the IGA between the Tribe and City of Taunton.

8.19.3.2 Alternative B: Reduced Intensity I

On-Site Work

Site Preparation

Site preparation work for Alternative B would be the same as that described for Alternative A in **Section 8.19.3.1**.

Site Grading

Site grading work for Alternative B would be the same as that described for Alternative A in **Section 8.19.3.1**.

Building Construction

Building construction for Alternative B would be the same as that described for Alternative A in **Section 8.19.3.1** in Phase 1A and Phase 4.

Alternative B would not include Phase 1B, Phase 2, or Phase 3.

Traffic Improvements

As described in **Section 8.1.3.6**, Alternative B would include widening and signalization of Stevens Street at O'Connell Way, improvements to the intersection of Stevens Street and Route 140 NB ramps, and improvements to the intersection of Route 140 and Route 24 SB ramps. As under Alternative A, off-site traffic improvements under Alternative B would take place in the same timeframe as on-site construction. TMPs to minimize impacts of traffic improvements under Alternative B would be developed as described for Alternative A in **Section 8.19.3.1**.

Water Main and Sewer Extension

Water main and sewer construction and replacement work for Alternative B would be the same as that described for Alternative A in **8.19.3.1**. Plans for this work are shown on **Figure 8.7-2**.

8.19.3.3 Alternative C: Reduced Intensity II

On-Site Work

Site Preparation

Site preparation work for Alternative C would be the same as that described for Alternative A in **Section 8.19.3.1**.

Site Grading

Site grading work for Alternative C would be the same as that described for Alternative A in **Section 8.19.3.1**.

Building Construction

Building construction for Alternative C would be the same as that described for Alternative A in **Section 8.19.3.1** in Phase 1A, Phase 1B, Phase 2, and Phase 3.

Alternative C would not include Phase 4.

Traffic Improvements

Off-site traffic improvement work for Alternative C would be the same as that described for Alternative A in **Section 8.19.3.1**.

Water Main and Sewer Extension

Because Alternative C does not include development of a water park and related facilities north of the railroad line on the Project Site, it would not involve the connection of the existing 24-inch diameter water main on Middleboro Avenue to the new 12-inch water main on the Project Site, or the construction of a new pumping station and water main for the water park. All other water main and sewer construction and replacement work for Alternative C would be the same as that described for Alternative A in **8.19.3.1**. Plans for this work are shown on **Figure 8.7-3**.

8.19.3.4 Alternative D: No Action

On-Site Work

Site Preparation

Site preparation work for the commercial, industrial, and warehouse buildings projected to be constructed under Alternative D would include erosion control measures, establishment of stabilized construction exits, and other measures as appropriate for each building.

Site Grading

Site grading work for the buildings projected to be constructed under Alternative D would include the stripping and stockpiling of topsoil and grading cuts and fills as appropriate for each building.

Building Construction

As described above in **Section 8.19.2.4**, due to potential wide variations in developers' plans, specific construction schedules cannot be projected for each building envisioned under Alternative D in **Section 4.3.5**. Buildings could be developed concurrently or over several years by one or more developers. It can be assumed that service roads and other temporary construction measures would be constructed as needed.

Traffic Improvements

The full build-out of the parcels within and adjacent to the LUIP at the Project Site in Taunton could increase traffic to the area over time. As described in **Section 8.1.2**, under Alternative D conditions, traffic operations generally remain the same as existing conditions at nearby intersections and interchanges, with some slightly worsening conditions. It is unlikely that mitigation measures in the form of traffic improvements beyond those that have already been proposed (see **Section 8.1.2.2**) would take place under Alternative D.

Water Main and Sewer Extension

The only water main improvements that would be made for the No Action, full build-out of the Project Site, would be to provide water service to the new buildings off the existing 12-inch water main in O'Connell Way or off the existing water mains surrounding the Project Site.

To handle the additional sewer needs of the full build-out of the Project Site under Alternative D, the City of Taunton would rehabilitate the Route 140 pumping station.

8.19.4 POTENTIAL IMPACTS AND MITIGATION

8.19.4.1 Alternative A: Proposed Development

Construction Noise

Construction of the Proposed Development will require the use of equipment that could be audible from off-site locations. The principal noise-generating activities will include: earth moving equipment, steel erection and concrete placement, building finishing, diesel truck traffic moving to and from the Project Site, and construction vehicles operating on-site.

In order to avoid adversely affecting nearby residences, businesses, and schools, the CM will implement a comprehensive noise mitigation plan for all subcontractors and equipment on site. Source controls are the most practical type of noise control for this construction site. Source controls measures include limiting noise emissions, restricting allowable types, and operating times of heavy equipment.

Specific mitigation measures will include:

- Construction equipment will be required to have installed and properly operating appropriate noise muffler systems.
- All exterior construction activities, such as site excavation/grading and new building construction, will typically be limited to normal working hours. Off-hour work will be minimized, to the extent practicable, to avoid excess noise generating work at sensitive times.
- Appropriate traffic management techniques to mitigate roadway traffic noise impacts will be implemented during the construction period.
- Excessive idling of construction equipment engines will be prohibited.
- All exhaust mufflers will be in good working order, and regular maintenance and lubrication of equipment will be required.
- A person will be assigned by the CM to ensure project mitigation compliance.

Appropriate operational specifications and performance standards will be developed and incorporated into the construction contract documents. These mitigation measures and performance standards will minimize the impact of noise during construction.

Groundwater Level Monitoring During Dewatering

Site preparation will require significant alteration of the existing ground surface. Preliminary information indicates that the existing groundwater is significantly below proposed cut elevations in areas where significant cutting will be required. Historical data indicates that generally groundwater has been observed at between three and five feet below existing grade at the lower elevations of the Project Site with greater depths to groundwater observed at the higher elevations. It is anticipated that all of the planned earthwork and finished grades (other than trench work for utilities, which would be temporary in nature) would be well above the observed groundwater elevations. The proposed finish grades of the buildings will match the finish grades of the existing buildings, and are significantly above the observed groundwater in these locations. In areas where new construction will take place (i.e. the remote parking areas), construction of stormwater management systems will require fill above existing elevations, therefore significant cuts into the groundwater table are not anticipated. The scope of the Proposed Development does not include any significant deep excavations or deep foundations. Therefore, groundwater level monitoring should not be necessary.

Air Quality

The main sources of potential construction related air quality impacts are emissions from construction equipment and motor vehicles and fugitive dust emissions from disturbed soil surface areas.

Under the Proposed Development, subcontractors will be required to adhere to all applicable regulations regarding control of dust and emissions. This will include, but not be limited to, maintenance of all motor vehicles, machinery, and equipment associated with construction activities and proper fitting of equipment with mufflers or other regulatory-required emissions control devices.

Dust generated from earthwork and other construction activities will be controlled by spraying with water. If necessary, other dust suppression methods will be implemented to ensure minimization of the off-site transport of dust. There also will be regular sweeping of the pavement of adjacent roadway surfaces during the construction period to minimize the potential for vehicular traffic to suspend dust and particulate matter.

Demolition and Construction Waste

The Proposed Development requires the demolition of buildings within and adjacent to several parcels of the Liberty & Union Industrial Park (LUIP). Additional waste will be generated during the construction of new buildings, parking areas, roadways, and infrastructure. These wastes are described in further detail in **Section 8.10.1**.

Construction Period Stormwater Management and Erosion/Sedimentation Control

The Tribe will implement a Stormwater Pollution Prevention Plan (SWPPP) to prevent impacts to the wetlands during the construction of the Proposed Development. The program will incorporate Best Management Practices (BMPs) specified in guidelines developed by the EPA and will comply with the requirements of the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges for Construction Activities.

The Proposed Development is subject to the provisions of NPDES because it will result in the disturbance of more than one acre of land. Prior to the start of construction, the Tribe and/or CM will file a Notice of Intent (NOI) with the EPA under the NPDES General Permit for Construction Activities. A SWPPP will be prepared. The SWPPP will include a project description, construction schedule and sequence, required erosion and sedimentation control, soil stabilization, documentation regarding inspections and maintenance, and a spill prevention plan. The SWPPP will be certified by the Tribe, and the CM and all subcontractors will be responsible for the implementation and maintenance of the plan. The SWPPP will be periodically inspected by authorized representatives of the Tribe.

The SWPPP will be implemented during construction to comply with the requirements of the NPDES General Permit. The CM will be responsible for implementing and maintaining all erosion and sedimentation control measures.

Site Preparation, Construction Staging and General Construction Requirements

Site preparation and construction staging for the Proposed Development will include several important steps. The contractor will establish site trailers and staging areas to minimize impacts on natural resources. The site office and staging areas will provide a location for erosion control equipment and supplies, documentation related to the Project's local permits and NPDES compliance, and spill control equipment. The CM will establish an "environmental safety" zone establishing a 10-foot buffer zone around the wetland areas on the site.

The following are some general requirements related to construction vehicle fueling and storage:

- Any refueling of construction vehicles and equipment will take place outside of the 10-foot wetlands buffer zone and will not be conducted in proximity to sedimentation basins or diversion swales.
- No on-site disposal of solid waste, including building materials, will be allowed in the 10-foot buffer zone. Stumps will be removed from the site.
- No materials will be disposed of into the wetlands or existing or proposed drainage systems. All subcontractors, including concrete suppliers, painters and plasterers, will be informed that the cleaning of equipment will be prohibited in areas where wash water will drain directly into wetlands or stormwater collection systems.
- The contractor will establish a water resource, e.g., "cistern supply area," to supply a "water truck," or other means, to provide moisture for dust control and irrigation. Water will not be withdrawn from wetland areas.

These measures would minimize impacts to natural resources during construction.

Construction Traffic

The construction period will generate construction traffic associated with employees and the transport of equipment and materials to the Project Site. The following is a summary of the expected impacts of construction-related traffic and the measures to be used to reduce any negative impacts during the construction period.

Truck Traffic and Site Access

The Tribe is committed to working with the City of Taunton to develop a comprehensive Construction Traffic Management Plan. This plan will incorporate measures to help ensure that appropriate traffic maintenance and protection elements will be in place during construction and will include the definition of designated routes for all associated construction truck traffic developed in close coordination with MassDOT and City staff prior to start of construction.

The Proposed Development will require construction access from a new service road from Stevens Street to the Project Site. Construction equipment, material deliveries and personnel vehicular travel to the Project Site in connection with the construction activities will use only this access. The CM will enforce a requirement that vehicles related to construction of the Project must access this service road by taking Route 140 onto Stevens Street rather than accessing Stevens Street from the Middleboro Avenue side. In order to safely accommodate this requirement, the service road will be constructed with a left turn lane from Stevens Street. The access and egress will be required through the duration of all construction activities.

The CM will establish site construction trailers and staging areas to minimize impacts on traffic. Trucks will be required to wait in on-site staging/waiting areas and will be prohibited from unloading on public roads.

Construction Worker Travel

The CM will make efforts to mitigate the impact of construction worker travel to the Project Site. An off-site lot will be utilized for construction worker parking. Workers will be shuttled to the Project Site. Workers will be encouraged to carpool to the Project Site to minimize vehicle trips. Ride Share and MassRides information will be made available to workers and encouraged.

The CM will encourage all major subcontractor trades to provide secure, on-site storage containers in order for employees to leave tools and equipment at the site and avoid the need to utilize their vehicle for storage/transportation. The CM will offer a shuttle service between the Project Site, the Silver City Galleria, and the Bloom Bus Terminal in order to connect workers to GATRA bus routes 3, 7, and 8. The CM will also be encouraged to consider, based on the needs of workers, providing a shuttle service between the Project Site and Middleborough/Lakeville MBTA station.

These measures would minimize vehicle trips during construction.

Construction Traffic Mitigation Overview

Summarized below are several measures which the Tribe and the CM will undertake to minimize traffic flow and safety impacts during the Project's construction phases.

- The Tribe will coordinate with the City of Taunton and MassDOT regarding all transportation-related construction impacts associated with the Project.
- Designated truck routes will be established to govern how trucks access the Project Site. The goal of this commitment is to have construction trucks use only the service road from Steven Street to the Project Site, and use only Route 140 to directly access Stevens Street. Police detail officers will be used as necessary to facilitate and maintain the safe and efficient movement of vehicles and pedestrians during construction activities.

- Prior to the implementation of construction activities, the CM will submit a traffic management plan to the Tribe and MassDOT for review and approval. This plan will detail the intended construction truck routes to the Project Site and any temporary roadway/intersection improvements that may be necessary to accommodate truck traffic and maintain the safe and efficient movement of vehicles, pedestrians and bicyclists.
- Should a partial street closure be necessary in order to transport or off-load construction materials and/or to complete construction-related activities, the closure will be limited to off-peak periods as defined by the appropriate permit granting authority so as to minimize the impact on vehicles and pedestrians.
- Secure fencing and protection will be provided in areas affected by construction to protect nearby pedestrian and vehicular traffic.
- Secure on-site storage will be provided for tools and equipment in an effort to minimize construction-related vehicle trips to the site.
- Construction worker parking will be provided in designated lots off-site and prohibited along adjacent roadways.
- The CM will offer a shuttle service between the Project Site, the Silver City Galleria, and the Bloom Bus Terminal in order to connect workers to GATRA bus routes 3, 7, and 8. The CM will be encouraged to consider, based on the needs of workers, providing a shuttle service between the Project Site and Middleborough/Lakeville MBTA station.
- Contractors working on the Project will be encouraged to implement a carpool/vanpool program.

Off-Site Traffic Management

A separate TMP will be developed specific to roadway improvements and the construction of the new water main and sewer extension, which will take place partly in public roadways. The actual TMP is a set of engineering drawings, prepared and stamped by a Professional Engineer, in accordance with the Manual on Uniform Traffic Control Devices (MUTCD). The TMP will also ensure that the MassDOT's publication "Work Zone Safety," and specific provisions required by the City of Taunton are included in those plans. These manuals and guidance documents provide detailed specifications for all aspects of the temporary roadway modifications that the Tribe will implement in the off-site construction zones including necessary lane widths, lane tapers, size, type and color of warning signs, dates and times of permitted work activities and similar provisions that ensure that the temporary impacts of construction permit safe travel through the construction zone.

8.19.4.2 Alternative B: Reduced Intensity I

Construction Noise

Principal noise-generating activities and mitigation measures for Alternative B would be the same as those described for Alternative A in **Section 8.19.4.1**. Mitigation measures and performance standards would minimize the impact of noise during construction.

Groundwater Level Monitoring During Dewatering

As under Alternative A, all earthwork and finished grades would be well above the observed groundwater elevations, and significant cuts into the groundwater table are not anticipated. Groundwater level monitoring should not be necessary.

Air Quality

Sources of construction related air quality impacts and dust and emissions control measures for Alternative B would be the same as those described for Alternative A in **Section 8.19.4.1**. Adherence to all applicable regulations regarding dust control and emissions would minimize the impact to air quality during construction.

Demolition and Construction Waste

The handling of demolition and construction waste under Alternative B would be very similar to Alternative A. These wastes are described in further detail in **Section 8.10.1**.

Construction Period Stormwater Management and Erosion/Sedimentation Control

The Tribe would implement a Stormwater Pollution Prevention Plan (SWPPP) to prevent impacts to wetlands during the construction of Alternative B, as described for Alternative A in **Section 8.19.4.1**. The CM would be responsible for implementing and maintaining all erosion and sedimentation control measures.

Site Preparation, Construction Staging and General Construction Requirements

Site preparation and construction staging steps for Alternative B would be the same as those described for Alternative A in **Section 8.19.4.1**. The general requirements related to construction vehicle fueling and storage listed for Alternative A would also apply. These measures would minimize impacts to natural resources during construction.

Construction Traffic

The construction period of Alternative B would generate construction traffic similar to that described of Alternative A in **Section 8.19.4.1**.

Truck Traffic and Site Access

The Tribe would work with the City of Taunton to develop a comprehensive Construction Traffic Management Plan for Alternative B as described for Alternative A. Plans for a new construction access service road from Stevens Street to the Project Site and staging/waiting areas described for Alternative A would be the same under Alternative B.

Construction Worker Travel

Plans for construction worker parking, shuttling, public transit and carpool access, and on-site storage described for Alternative A would be the same under Alternative B. These measures would minimize vehicle trips during construction.

Construction Traffic Mitigation Overview

Under Alternative B, the Tribe and CM would undertake the same traffic flow minimization and safety measures listed under Alternative A in **Section 8.19.4.1**.

Off-Site Traffic Management

As under Alternative A, a separate TMP would be developed specific to roadway improvements and the construction of the new water main and sewer extensions for Alternative B.

8.19.4.3 Alternative C: Reduced Intensity II

Construction Noise

Principal noise-generating activities and mitigation measures for Alternative C would be the same as those described for Alternative A in **Section 8.19.4.1**. Mitigation measures and performance standards would minimize the impact of noise during construction.

Groundwater Level Monitoring During Dewatering

As under Alternative A, all earthwork and finished grades would be well above the observed groundwater elevations, and significant cuts into the groundwater table are not anticipated. Groundwater level monitoring should not be necessary.

Air Quality

Sources of construction related air quality impacts and dust and emissions control measures for Alternative C would be the same as those described for Alternative A in **Section 8.19.4.1**. Adherence to all applicable regulations regarding dust control and emissions would minimize the impact to air quality during construction.

Demolition and Construction Waste

The handling of demolition and construction waste under Alternative C would be very similar to Alternative A. These wastes are described in further detail in **Section 8.10.1**.

Construction Period Stormwater Management and Erosion/Sedimentation Control

The Tribe would implement a Stormwater Pollution Prevention Plan (SWPPP) to prevent impacts to wetlands during the construction of Alternative C, as described for Alternative A in **Section 8.19.4.1**. The CM would be responsible for implementing and maintaining all erosion and sedimentation control measures.

Site Preparation, Construction Staging and General Construction Requirements

Site preparation and construction staging steps for Alternative C would be the same as those described for Alternative A in **Section 8.19.4.1**. The general requirements related to construction vehicle fueling and storage listed for Alternative A would also apply. These measures would minimize impacts to natural resources during construction.

Construction Traffic

The construction period of Alternative C would generate construction traffic similar to that described of Alternative A in **Section 8.19.4.1**.

Truck Traffic and Site Access

The Tribe would work with the City of Taunton to develop a comprehensive Construction Traffic Management Plan for Alternative C as described for Alternative A. Plans for a new construction access service road from Stevens Street to the Project Site and staging/waiting areas described for Alternative A would be the same under Alternative C.

Construction Worker Travel

Plans for construction worker parking, shuttling, public transit and carpool access, and on-site storage described for Alternative A would be the same under Alternative C. These measures would minimize vehicle trips during construction.

Construction Traffic Mitigation Overview

Under Alternative C, the Tribe and CM would undertake the same traffic flow minimization and safety measures listed under Alternative A in **Section 8.19.4.1**.

Off-Site Traffic Management

As under Alternative A, a separate TMP would be developed specific to roadway improvements and the construction of the new water main and sewer extensions for Alternative C.

8.19.4.4 Alternative D: No Action

Construction Noise

It can be assumed that principal noise-generating activities and mitigation measures for Alternative D would be similar those described for Alternative A in **Section 8.19.4.1**. Appropriate mitigation measures and performance standards for construction of each building would minimize the impact of noise during construction.

Groundwater Level Monitoring During Dewatering

Because of the Site characteristics described in **Section 8.19.4.1** and the projected layout of commercial, industrial, and warehouse buildings shown in **Figure 4.3-4**, it is assumed that all earthwork and finished grades in Alternative D would be well above the observed groundwater elevations, and that significant cuts into the groundwater table would not occur. Under these conditions, groundwater level monitoring would not be necessary.

Air Quality

It can be assumed that sources of construction related air quality impacts and dust and emissions control measures for Alternative D would be similar to those described for Alternative A in **Section 8.19.4.1**. Adherence to all applicable regulations regarding dust control and emissions would minimize the impact to air quality during construction.

Demolition and Construction Waste

As described in **Section 8.10.1**, under Alternative D, property developers would contract the disposal of construction waste that could not be recycled to a company that accepts construction/demolition materials. Because Alternative D would not involve the full demolition of existing buildings on the Project Site, these wastes would be less under Alternative D than under the development Alternatives.

Construction Period Stormwater Management and Erosion/Sedimentation Control

Buildings could be developed concurrently or over several years by one or more developers under Alternative D. Any developers' projects that involve the disturbance of more than one acre of land would be subject to the provisions of NPDES. As under the other Alternatives, a SWPPP would be prepared that would include a project description, construction schedule and sequence, required erosion and sedimentation control, soil stabilization, documentation regarding inspections and maintenance, and a spill prevention plan. The SWPPP would be implemented during construction to comply with the requirements of the NPDES General Permit.

Site Preparation, Construction Staging and General Construction Requirements

It can be assumed that site preparation, construction staging steps, and vehicle fueling and storage requirements for Alternative D would be similar those described for Alternative A in **Section 8.19.4.1**. These measures would minimize impacts to natural resources during construction.

Construction Traffic

Because buildings could be developed concurrently or over several years by one or more developers under Alternative D, the impact of construction traffic on and around the Project Site could vary widely. It can be assumed that developers would take steps to minimize impacts.

Truck Traffic and Site Access

Developers under Alternative D would construct temporary service roads and staging/waiting areas for construction vehicles as appropriate for each building project.

Construction Worker Travel

Developers under Alternative D would create plans for construction worker parking, shuttling, public transit and carpool access, and on-site storage as appropriate for each building project.

Construction Traffic Mitigation Overview

Developers under Alternative D would undertake traffic flow minimization and safety measures as appropriate for each building project.

Off-Site Traffic Management

It is not anticipated that the build-out of the Project Site into commercial, industrial, and warehouse facilities would generate enough traffic or water and sewer demands to require developers to be responsible for off-site work. Therefore, no off-site traffic management during construction would be necessary under Alternative D.

8.19.5 CONSTRUCTION WORK HOURS

Generally, under each Alternative, the construction work hours on-site will be from 7:30 AM to 4:30 PM, Monday through Friday. For off-site work zones including existing roadway improvements and utility work, the work hours will be limited to Monday through Friday from 7:00 AM to 3:30 PM. Equipment warm-up will not occur before 6:30 AM, and truck queuing or idling will not be permitted before 6:30 AM. Some construction activities, such as foundation preparation, concrete placement and façade work could extend beyond 4:30 PM on weekdays or on weekend days. No trucks will be allowed to idle more than five minutes. There may be occasions when work will occur outside these hours; however, appropriate authorizations will be obtained prior to such deviations.

8.19.6 RODENT CONTROL

A formal rodent control program will be implemented at the start of construction under any of the Alternatives. In order to control rodents and animals, the Tribe will use as a guideline the Massachusetts Sanitary Code, Chapter 11, 105 CMR 410.550 and the State Building Code, Section 108.6. The extermination of rodents shall be required prior to demolition (i.e., existing comfort stations), excavation, and foundation.

SECTION 8.20

INDIRECT AND GROWTH INDUCING EFFECTS

8.20.1 INTRODUCTION

NEPA requires that an EIS analyze both the indirect and growth-inducing effects of a proposed action (40 C.F.R. Section 1502.16[b], 40 C.F.R. Section 1508[b]). As defined in NEPA regulations, indirect effects are “caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density or growth, and related effects on ... natural systems.”

For the Proposed Development, the potential for indirect off-site impacts are limited to those resulting from proposed off-site traffic mitigation and water and sewer improvements.

8.20.2 INDIRECT EFFECTS

8.20.2.1 Off-site Transportation Improvements

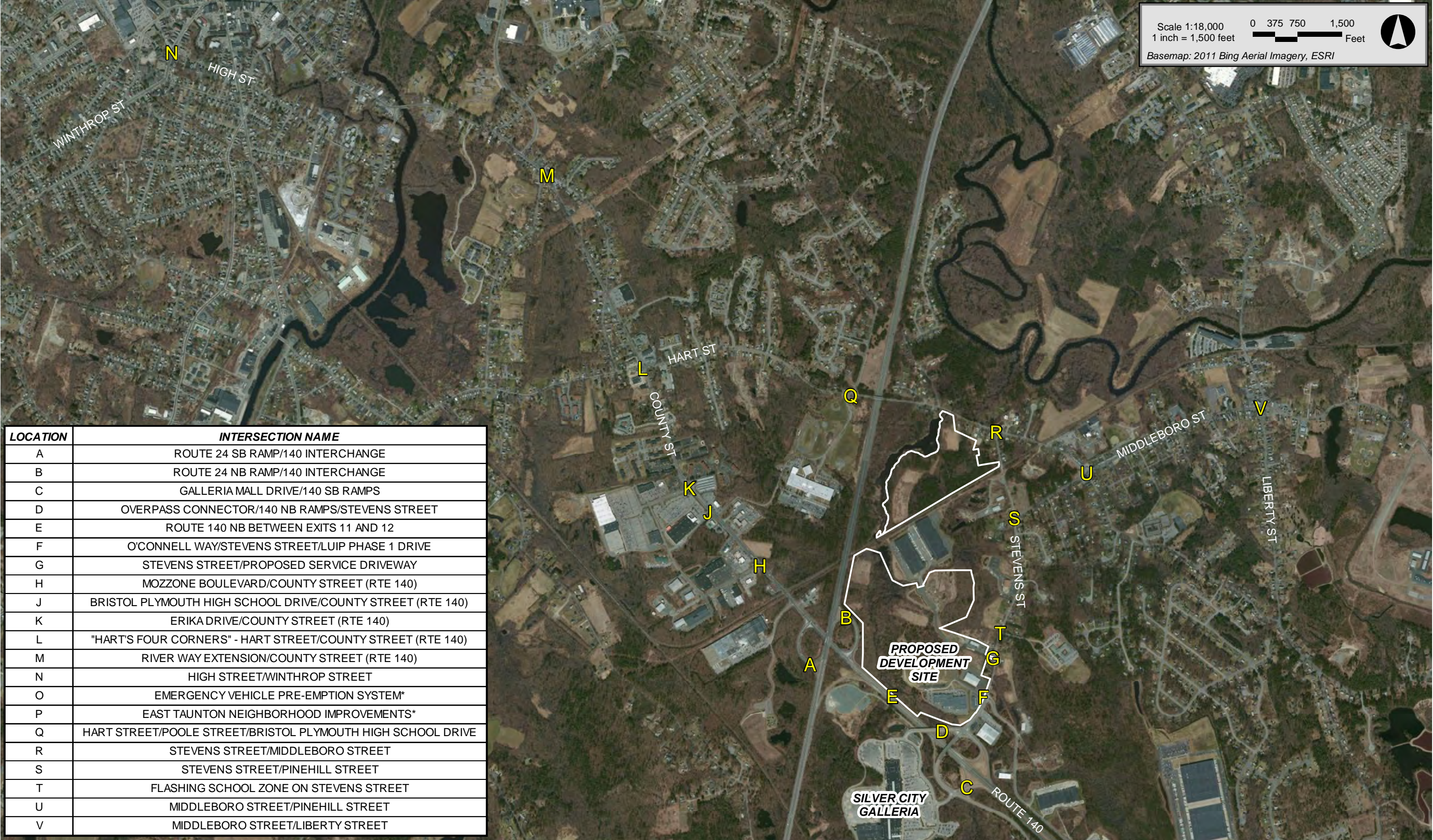
This section discusses the potential indirect effects of off-site traffic improvements. Because the impacts along Route 140 between the Route 24/140 Interchange and the Route 140/Stevens Street Interchange are essentially “on-site” and directly impacted by the Proposed Development’s generated traffic, those impacts were considered as direct effects and have been discussed in previously as appropriate. The Tribe also, however, agreed in the Intergovernmental Agreement (IGA) with the City of Taunton to fund and implement other off-site traffic improvements. These improvements are shown on **Figure 8.20-1** were briefly described in **Sections 8.1.3.4 and 8.1.3.6**.

Proposed Off-site Transportation Improvements

Alternative A

Proposed off-site transportation improvements under Alternative A were described in detail in **Section 8.1.3.4** and are summarized briefly below. They include the following locations.

- **Galleria Mall Drive South/County Street/Route 140 SB Ramps (Exit 11A)** – lane adjustments and signal improvements.
- **Overpass Connector/Route 140 NB Ramps/Stevens Street Intersection** – A new entrance-ramp to Route 140 northbound from the O’Connell Way Stevens Street intersection (Option 1) or geometric modifications to the O’Connell Way Stevens Street intersection (Option 2) is proposed. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.
Route 140 NB (between Exit 11 and 12) – Widening of Route 140 northbound is proposed. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.



- **Stevens Street Site Driveways**

- O'Connell Way – Stevens Street would be widened under Option 2 (i.e., if no new Route 140 northbound entrance ramp is constructed). Impacts at this location were considered direct impacts.
- Proposed New Casino Service Road – New unsignalized intersection onto with Stevens Street is proposed. Impacts at this location were considered to be direct impacts.

- **Route 24 SB Ramp (Exit 12B)/County Street (Route 140)** – The addition of a slip ramp from Route 24 SB to Route 140 NB (Option 3) or ramp widening and addition of lanes on the existing Exit 12 (Option 4) ramp are proposed. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.

- **Route 24 NB Ramp (Exit 12A)/County Street (Route 140)** – Ramp widening and addition of lanes. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.

- **Route 140 West of Route 24**

Note that MassDOT independently is planning improvements to Route 140 (MassDOT Project #605191) to widen and reconstruct the roadway and sidewalks, install a median, upgrade traffic signals, and improve drainage. This work is likely to occur regardless of the Proposed Development. The Tribe will undertake the following improvements as agreed to in the IGA that will complement MassDOT's planned upgrades.

- *Mozzone Boulevard/County Street (Route 140)* – signal improvements and lane striping changes
- *Bristol Plymouth HS Drive/County Street (Route 140)* – intersection to be signalized
- *Erika Drive/County Street (Route 140)* – signal improvements, no geometric changes
- *Hart's Four Corners -- Hart Street/County Street (Route 140)* – minor widening to accommodate turn lanes.

- **Other Locations**

The Tribe will undertake the following improvements as agreed to in the IGA.

- *County Street (Route 140)/Gordon M. Owen Riverway Extension* – signal timing and phasing, no geometric changes required.
- *High Street/Winthrop Street* – signal timing and phasing, no geometric changes required
- *Winthrop Street (Route 44) at Highland Street* – signal timing and phasing, no geometric changes required
- *Emergency Vehicle Pre-emption at Thirteen Signalized Intersections* – traffic signal equipment changes only, no geometric changes.
- ***East Taunton Neighborhood Improvements***
 - *Bristol Plymouth High School Drive/Hart Street/Poole Street* – minor realignment of driveway for ADA accommodations

- *Stevens Street/Middleboro Avenue* - signal improvements, ADA accommodations, minor sidewalk widening
- *Stevens Street/Pinehill Street* – ADA accommodations and updated crosswalk markings
- *Middleboro Avenue/Pinehill Street/Caswell Street* – intersection to be signalized, may require some work outside the existing right-of-way depending on design selected
- *Middleboro Avenue/Old Colony Avenue/Liberty Street* – intersection to be signalized, minor geometric improvements, ADA accommodations, sidewalks proposed, may require some work outside the existing right-of-way depending on design selected
- *East Taunton Elementary Driveway at Stevens Street* – signal and pavement markings

Alternative B

Alternative B, being significantly less intensive a development compared to Alternative A would involve less off-site traffic mitigation. As described in detail in **Section 8.1.3.6**, mitigation would be required only at four locations.

- **O’Connell Way/Stevens Street/Revolutionary Road (Main Driveway)** – restriping, minor widening, and signal timing adjustments are proposed. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.
- **Overpass Connector/Route 140 NB Ramps/Stevens Street** - restriping and signal timing adjustments are proposed.
- **Route 24/Route 140 interchange SB off ramp** – lane addition and signal timing are proposed. Wetland and stormwater impacts at this location were considered direct impacts and were discussed in **Sections 8.2 and 8.3**.
- **Secondary Site Drive/Stevens Street** – new unsignalized intersection with Stevens Street is proposed. Wetland and stormwater impacts at this location were considered direct impacts.

Alternative C

Alternative C would involve the same off-site traffic mitigation as Alternative A.

Alternative D

The No Action Alternative would not involve any off-site traffic improvements in the region beyond those previously proposed by others, described in **Section 8.1.2.2**.

Indirect Effects of Proposed Off-site Transportation Improvements

Alternative A

The proposed off-site transportation improvements are expected to have only minor environmental impacts.

Only three elements of the proposed off-site transportation improvements require any substantial new construction. They are:

- the improvements to the Route 24/140 Interchange (Exits 12B and 12A on Route 24),
- the widening of Route 140 northbound, and
- the construction of a new Route 140 northbound entrance ramp from the Project Site entrance at the O'Connell Way/Stevens Street intersection.

These three locations are also the only areas at which wetland resources are present. Because these areas are within the immediate vicinity of the land proposed to be taken into trust and because these improvements are integral to the viability of the Proposed Development, impacts at these locations were considered to be direct impacts and have been discussed previously.

The remaining off-site transportation improvements consist generally of only minor geometric changes (generally confined to within the existing roadway rights-of-way), changes to lane striping, signal phasing and timing changes, ADA accommodations, and sidewalk improvements. Because no new significant new construction outside of roadway rights-of-way are proposed at most locations, impacts to the environment are expected to be very minor as described in this section.

Transportation

The proposed off-site transportation mitigation measures will result in improved traffic flow, safety, and accommodations for pedestrians as described in **Section 8.3.1.4**.

Wetlands and Floodplain

There are no wetland or floodplain resources in the vicinity of the proposed off-site transportation mitigation measures except for the Route 24/140 Interchange and the proposed Route 140 northbound entrance ramp from the O'Connell Way/Stevens Street intersection. Impacts to wetlands and floodplains from these improvements were discussed in **Section 8.2**.

Stormwater

Stormwater impacts from the Route 24/140 Interchange and the proposed Route 140 northbound entrance ramp from the O'Connell Way/Stevens Street intersection were discussed in **Section 8.3**. The remaining locations will not involve significant widening and are therefore not expected to result in any significant

amounts of new impervious area that would in turn result in increased amounts of stormwater runoff. No significant changes in stormwater runoff rates or patterns are expected.

Geology and Soils

The intersections that will be improved are generally flat. Because no significant new geometric changes are required, no significant cut or fill will be required. A soil erosion and sediment control plan will be developed during design for all new construction areas consistent with the NPDES General Permit for stormwater discharges associated with construction activities. Adherence to design standards, inspection and quality control during construction and periodic cleaning of soil erosion and sediment control features will minimize and mitigate the potential for erosion and sedimentation. No significant impacts are expected.

Rare Species and Wildlife Habitat

According to the Massachusetts Natural Heritage Atlas,¹ prepared by the NHESP, the Study Area does not contain any areas of Priority Habitat or Estimated Habitat for state-listed species. Impacts to vegetation and wildlife habitat in the vicinity of proposed ramps described under Options 1 and 3 would be limited to the greatest extent practicable; improvements at Route 24 and 140 and the potential Route 140 northbound entrance ramp would be confined to previously disturbed and developed areas proximate to existing roadways, and the potential Route 140 Northbound ramp from Route 24 Southbound would not involve any work in areas mapped as protected habitat. Because the other off-site transportation improvements will generally be confined to within the existing roadway rights-of-way or other developed areas immediately adjacent to the roadways, no significant impact to any rare species habitat or wildlife habitat is likely to occur.

Oil and Hazardous Materials

Because the proposed off-site transportation improvements consist generally of only minor geometric changes (generally confined to within the existing roadway rights-of-way), they are not likely to encounter OHM contamination. The selected contractor(s) will be required to implement measures to protect the health and safety of the public and the environment during construction. During construction, any contaminated material that is encountered will be handled in accordance with all applicable provisions of the Massachusetts Contingency Plan (MCP). Any such material will be temporarily stored in areas isolated from the public, secured and stockpiled on an impervious surface, and covered to prevent dispersion and runoff to the environment. Once classified for reuse, recycling, treatment or disposal, the material will be removed from the storage areas. With these mitigation measures in place, no significant impacts are expected.

¹ Massachusetts Office of Geographic Information (MassGIS). October 1, 2008. Massachusetts Natural Heritage Atlas, 13th Edition. Available at <http://www.mass.gov/anf/research-and-tech/it-serv-and-support/application-serv/office-of-geographic-information-massgis/datalayers/prihab.html>.

Water Supply

The proposed off-site transportation improvements will not require a water supply and therefore will not have any impact on water supplies.

Wastewater

The proposed off-site transportation improvements will not generate wastewater and therefore will not have any impact on wastewater volumes or management.

Utilities

The proposed off-site transportation improvements will be designed and constructed so as not to interfere with existing utility infrastructure. Any disturbance during construction would be minor and temporary. New signal equipment will require minor amounts of electricity but is not expected to pose any burden to the Taunton Municipal Lighting Plant (TMLP), the local utility that would supply the needed electricity.

Solid Waste

Construction of the proposed off-site transportation improvements will generate minor amounts of construction waste and minor amounts of asphalt and concrete that will need to be disposed of. The contractor will be responsible for contracting with a private waste hauler to dispose of any construction waste at a properly licensed facility. Ongoing operation will not result in any solid waste. No significant impacts are expected.

Air Quality

Because the proposed off-site transportation improvements will result in improved traffic flow and reduced congestion at intersections, they will help to reduce pollution and improve air quality. The contractor will be required to develop a plan that includes Best Management Practices for controlling dust generated during construction. The plan will include details as to how dust emissions will be controlled and/or minimized for earthwork activities, stockpiling of material, and construction. Control measures include, but are not limited to, dust suppression agents, wind screens, wind barriers, plastic tarp protection, and truck cargo covers during transport. The overall impact on regional air quality from the project is discussed in **Section 8.11**.

Greenhouse Gas Emissions

Because the proposed off-site transportation improvements will result in improved traffic flow and reduced congestion at intersections, they will help to reduce idling and GHG emissions. The overall impact on GHG from the project is discussed in **Section 8.12**.

Cultural Resources

Most of the proposed off-site transportation improvements are situated within the existing rights-of-way and in areas with no known historic resources. Where historic properties are present, they have been included in the State Inventory of Historic Places.

The proposed improvements at Hart's Four Corners (Route 140 and Hart Street) is situated in the vicinity of two historic properties included in the Inventory (TAU.572 and TAU.573), however, only one is extant (TAU.573). The historic setting of this property is substantially altered with the presence of modern commercial structures. The proposed widening of County and Hart streets to accommodate additional turning lanes will not substantially alter the existing setting of this property.

Properties included in the National Register (St. Thomas Episcopal Church – TAU.213, McKinstrey House – TAU.214, Henry G. Brownell House – TAU.216, Winthrop Street Baptist Church – TAU.127) and Inventory are located in the vicinity of the High/Winthrop streets project area (TAU.127, 215 and 217-219), however, no physical alteration to this intersection is proposed as improvements will be limited to signal phasing changes. There will be no impacts to historic resources at this location.

The traffic signal, ADA accommodations and crosswalks at this location will not result in significant alteration to the setting of the extant properties included in the Inventory (TAU. Z and 596-598) situated near this project location. Most of the existing worker housing has been altered through the application of artificial siding and replacement windows.

Noise

Construction of the proposed improvements will result in minor temporary noise impacts from the operation of construction equipment, but the improvements are not expected to have any impact on noised levels following construction. Construction noise impacts will be mitigated for by the use of appropriate measures such as the installation of mufflers on construction equipment, confining construction to daylight hours, and by limiting idling equipment. More detail on construction noise is provided in **Section 8.19.4.1**.

Visual Impacts

The proposed off-site traffic improvements are relatively minor, will not affect any undeveloped areas, and therefore will not result in any significant changes that would be visually significant.

Socioeconomic Impacts

The proposed off-site transportation improvements are expected to have a small but beneficial impact on the local economy. The overall cost of the improvements is estimated to be approximately \$15 million. All construction costs will be paid for by the tribe; therefore, there will be no adverse impact to local or state public transportation budgets. Construction will likely be done by local construction companies thereby boosting the local economy. No significant adverse socio-economic impacts related to

construction are expected. Access to any adjoining businesses will be maintained throughout construction so no loss of income to local businesses is expected.

Environmental Justice

The proposed off-site transportation improvements are not expected to result in positive transportation and socio-economic impacts and to not have any significant adverse environmental impacts as described in previous sections. Therefore, they will not adversely affect any minority or disadvantaged population.

Alternative B

Alternative B, being substantially reduced in size, is proposed to have less extensive off-site transportation improvements. The off-site mitigation under Alternative B is a subset of Alternative A as all four proposed locations are included under Alternative A. The proposed improvements under Alternative B are less extensive, however. For example, at the Overpass Connector/Route 140 Northbound Ramps/Stevens Street, only restriping and signal timing is proposed, while under Alternative A, a new Route 140 northbound entrance ramp is proposed. Similarly, at the Route 24/140 Interchange, no new slip ramp is needed under Alternative B, which will result in less impact.

As discussed under Alternative A, the proposed off-site transportation improvements are not expected to result in any significant impacts. Because the improvements under Alternative B are a smaller subset of less extensive improvements, they too are not expected to result in any significant adverse impacts.

Alternative C

Alternative C would involve the same off-site transportation improvements as Alternative A and therefore would have the same impacts as those of Alternative A.

Alternative D

Alternative D is likely to be developed by different developers proposing construction on various parcels within the LUIP over a period of time. Alternative D does not include any specific new off-site transportation improvements tied directly to the buildout of the Project Site. Therefore, it would not have associated indirect impacts. Other regional improvements planned were, however, built into the future year traffic model as explained in **Section 8.1.2.2**. These improvements are considered in **Section 8.21**, Cumulative Impacts.

8.20.2.2 Off-site Water and Sewer Improvements

Water Supply

As described in **Section 8.7.6.1**, off-site mitigation for water supply for Alternatives A, B, and C would consist of upgrading the existing 12-inch Stevens Street water main to a 16-inch water main, and replacing the 12-inch water main and an 8-inch water main in Pinehill Street with a 16-inch water main to

provide an acceptable level of fire protection. Other improvements would occur within O'Connell Way. Improvements within O'Connell Way were considered to be on-site direct impacts.

The construction of the proposed new water mains is discussed in **Section 8.19.3.1**. The installation of the pipe will require temporary construction within the roadway rights-of-way. Appropriate Best Management Practices (BMPs) will be employed to reduce noise, dust, erosion, and other construction nuisances. Impacts are summarized below.

- The construction of the water mains will not impact any ecological resources such as wetlands or rare species, nor will it result in any permanent change in stormwater runoff amounts or patterns.
- Roadways will be returned to preconstruction conditions, so there will be no change in topography or any significant impact on soils.
- The installation will be coordinated with other utilities in the area and will be designed so as not to interfere with existing electrical or gas lines.
- Minor amounts of solid waste typical of construction involving roadway trenching will be handled in accordance with all applicable regulations and disposed of. Efforts will be made to recycle as much debris as possible.
- Temporary air quality impacts such as dust and construction equipment emissions will be controlled through the use of wetting agents and other appropriate BMPs described in **Section 8.19**.
- Temporary noise impacts will be mitigated the installation of mufflers on construction equipment, confining construction to daylight hours, and by limiting idling equipment.
- Because the work will be contained within the right-of-way and not result in any change to the visual environment, no impacts to any historic resources are likely to occur.
- The construction will be funded by the Tribe at no cost to the City of Taunton. Therefore it will not have any adverse socio-economic impact.
- The area for installation of the water mains is not in an Environmental Justice Community, and will not have any significant adverse impacts to abutting properties beyond temporary construction impacts such as noise.

In summary, no significant impacts are expected to occur as a result of the water main installation on Pinehill and Stevens Street for any of the Build Alternatives A, B, or C.

The only water supply improvements that would be made for the No Action Alternative would be to provide water service to the new buildings from the existing 12-inch water main in O'Connell Way or off the existing water mains surrounding the Project Site. These minor connections would not be expected to have any adverse environmental impacts.

Wastewater

As described in **Section 8.8.2.3**, off-site mitigation for wastewater impacts will include making improvements to sewers to reduce inflow and infiltration (I/I) and making improvements to the

Route 140 Pumping Station located adjacent to the Route 140/Stevens Street Interchange. The specific mitigation for each of the Alternatives is summarized below.

Alternative A

Under Alternative A, the Tribe will remove 1.125 million gallons of peak inflow/infiltration (I/I) from the sewer collection system. I/I removal will be achieved through sewer system rehabilitation including cured-in-place pipe lining, pipe joint sealing and manhole sealing. Removal of this large volume of extraneous flow from the City's sewer system will reduce significantly the frequency of combined sewer overflows (CSOs) and create an effective increase in WWTF capacity.

The Tribe will also rehabilitate the existing Route 140 Pumping Station by installing new pumps and controls. The Route 140 Pumping Station will be redesigned to include approximately 110,000 GPD of existing flow, 177,000 GPD of flow from the Proposed Development, and additional capacity as determined by the City of Taunton.

Alternative B

The Tribe will remove 0.5 million gallons of peak I/I from the sewer collection system under the Alternative B. Removal of extraneous flow from the City's sewer system will reduce the frequency of CSOs and create an effective increase in WWTF capacity. The Route 140 PS will be rehabilitated and redesigned to include approximately 110,000 GPD of existing flow, 54,500 GPD of flow from the Project, and additional capacity as determined by the City of Taunton.

Alternative C

The Tribe will remove 0.88 million gallons of peak I/I from the sewer collection system under Alternative C. Removal of extraneous flow from the City's sewer system will reduce the frequency of CSOs and create an effective increase in WWTF capacity. The Route 140 PS would be rehabilitated and redesigned to include approximately 110,000 GPD of existing flow, 177,000 GPD of flow from the Project, and additional capacity as determined by the City of Taunton.

Alternative D

Under the No Build Alternative, it is estimated that a total of 115,000 gallons of peak I/I would be removed from the sewer collection system to accommodate buildout of the LUIP by others. The City of Taunton would be responsible for, and bear the cost of, rehabilitation of the Route 140 Pumping Station.

The proposed improvements to reduce I/I and upgrade the Route 140 Pumping Station are not expected to result in any significant adverse environmental impacts under any of the Alternatives. The work will have the beneficial impact of reducing the incidence of combined sewer overflows and increasing the capacity of the WWTP. Other expected impacts from the work are as follows:

- The proposed work is not expected to affect any ecological resources such as wetlands or rare species.

- Any sewer line repair work will return all areas to pre-existing conditions, so there will be no change in topography or any significant impact on soils.
- Sewer repair work and work at the Route 140 PS will be coordinated with other utilities in the area and will be designed so as not to interfere with existing electrical or gas lines.
- Minor amounts of solid waste typical of construction involving roadway trenching will be handled in accordance with all applicable regulations and disposed of. Efforts will be made to recycle as much debris as possible.
- Temporary air quality impacts such as dust and construction equipment emissions will be controlled through the use of wetting agents and other appropriate BMPs described in **Section 8.19**.
- Temporary construction noise impacts will be mitigated the installation of mufflers on construction equipment, confining construction to daylight hours, and by limiting idling equipment.
- Because all areas will be restored to pre-existing conditions, the work will not result in any change to the visual environment and no impact to any historic resources are likely to occur.
- The mitigation work will be entirely funded by the Tribe at no cost to the City of Taunton. Therefore it will not have any adverse socio-economic impact.
- The work is not expected to occur within an Environmental Justice community, and will not have any significant adverse impacts to abutting properties beyond minor temporary construction impacts such as noise.

8.20.3 GROWTH INDUCING EFFECTS

The Proposed Development (Alternative A) is expected to create substantial new permanent employment, which could have the potential to result in growth inducing effects of new housing and commercial development. The operation of the Proposed Development will also generate a demand for goods and services, thereby stimulating economic activity. In addition, visitors to the Proposed Development would spend money in the area, further stimulating economic activity. All three of these factors—employment, operational demands, and visitor spending—have been examined for their potential to induce growth in the local and regionally affected areas. As described in previous sections, these effects would be similar but reduced by the development of the Project Site under other Alternatives.

8.20.3.1 Employment Induced Effects

As described in **Section 8.16**, it is anticipated that a majority of workers filling Proposed Development jobs would already be living in the area, many in the City of Taunton itself, and that in-migration would be minimal. The Tribe plans to implement a recruitment program ahead of the opening of the Project, and the Tribe has committed through the IGA with the City of Taunton to work in good faith to hire local residents.

Overall, the employment demand generated by the Proposed Development in the study area can easily be met by the available labor force within Bristol and Plymouth Counties. As discussed in **Section 8.16.4**

“Economic Benefits Analysis,” the Project is expected to generate approximately 3,500 jobs on the Project Site, with an additional 1,540 jobs created indirectly within the two-county area. As of 2011, there were approximately 49,561 unemployed persons living within Bristol and Plymouth Counties, with 2,681 living in the City of Taunton (see **Table 7.16-8**). The majority of the employment at the Proposed Development would be in the food and beverage, gaming, recreation, and hotel sectors, which would not require specific skill sets that could not be obtained through basic employee training. Therefore, it is not expected that a substantial number of new workers would migrate to the study area as a result of the Proposed Development.

When the Proposed Development is in full operation, the total direct employee compensation of the 3,500 new employees is estimated to be approximately \$93.20 million per year. The wages earned by employees would be largely spent in the communities in which they reside. Any newly settled workers would represent new consumers of housing, as well as goods and services. Given that in-migration is expected to be very limited, however, the most important source of induced growth potential would result from employees already residing in the study area who were formerly unemployed, and those who shifted from existing part-time jobs to full-time jobs at the Proposed Development. The wages earned by these individuals would represent incrementally greater spending potential of existing residents.

The wages of employees would be used to provide workers and their families with the necessities of life, including food and shelter (e.g., rental or owner-occupied housing), clothing, health care, and other services and goods. To the extent that the majority of these purchases are made locally, businesses and industries serving resident communities with these goods and services would experience increased demands, resulting in further investments in capital and labor needed to meet these increased demands. Opportunities for the expansion of existing businesses and the opening of new businesses would exist.

The business sectors most likely to experience induced growth effects in the form of expansion and new growth opportunities include retailers of food and goods, such as grocers, department stores, lumber, hardware, and clothing. In addition, personal support and medical services, such as doctors and dentists, as well as accountants and insurance businesses, would be expected to experience new demand opportunities. Eating and drinking establishments, as well as recreation and amusement operations would be expected to benefit from the increased demand of any new employee residents and the increased spending potential of formerly unemployed and underemployed project employees.

8.20.3.2 Operation-Related Induced Effects

The purchase of goods and services resulting from the operations of the Casino would represent a substantial growth inducing effect of the Proposed Development. As shown in **Table 8.16-4**, the direct economic output of the Proposed Development (Alternative A) is estimated at approximately \$279.95 million per year. The operation of the proposed casino, waterpark, hotels, and associated restaurants and entertainment amenities would require the ongoing purchase of a wide range of goods and services, many of which would be purchased within the local and regional market areas. These purchases would entail produce, foodstuffs, and wholesale goods, as well as services such as transportation, maintenance, and repairs.

The demand the local and regional economies experience would represent opportunities for the expansion and creation of businesses to serve the operational needs of the Proposed Development. Wholesale sectors serving the beverage, restaurant, hospitality, and entertainment industries would most likely find increased business as a result of the Proposed Project.² These industries would be those with increased opportunities for induced growth potential. As a result of the two Indian casinos built in Southeastern Connecticut, the area has seen an expansion and increase in services such as food wholesale warehouses and linen services.³

As shown in **Table 8.16-4**, indirect economic benefits due to operation of the preferred alternative would be substantial. Indirect economic output or demand (demand from support industries) would total approximately \$98.56 million per year in Bristol and Plymouth Counties and \$103.64 million per year in Massachusetts as a result of increased business activity among the industries serving the project. Wholesalers, for example, providing fresh produce would likely invest to expand their operations to secure competitive positions in the new markets created by the project. New spending and investment by these businesses in capital (e.g., equipment) and labor (e.g., new or expanded employment) represents an important segment of induced growth potential for the region. The expenditures associated with the annual operation of the proposed project would support an estimated 710 indirect jobs throughout Bristol and Plymouth Counties, and a total of 740 indirect jobs in Massachusetts.

As indicated in **Section 8.16**, it is anticipated that a majority of workers filling proposed project jobs would already be living in the area, many in the City of Taunton, and that in-migration would be minimal. While project operations could indirectly create the need for some new housing by spurring economic development in the region, it cannot be reasonably projected what or where that need might specifically be, or how the need might be met. Unlike direct effects of project operations, the induced growth is more widely disseminated throughout the region. Therefore, estimates of induced growth in this and other casino studies is appropriately limited to descriptions of the overall magnitude of induced growth effects, rather than specifically identifying locations where these effects would likely occur.

The induced growth created by the Proposed Development would create additional demand for community services, including police, fire, and emergency services, schools, and health and welfare-related services. The additional demand would be created due to the establishment of new businesses or the growth of existing businesses, new employees, and new residents within Bristol County and the larger study area. Similar to direct growth, the increased demand generated by induced growth would be offset by spending and associated tax revenues to the County and State. In addition, new property tax revenues would be generated by any induced residential construction, and would be collected by County, municipal, school, and special district taxing authorities.

As discussed above, it would be speculative to quantify the incremental burden created by induced growth on the community facilities of any given municipality because the businesses, employment, and new residents indirectly generated by the project would be spread widely throughout the region. Compared to

² Rephann, Terrance J., et. al. 1997. Casino Gambling as an Economic Development Strategy, *Tourism Economics* 3,2: 161-183.

³ State of Maine Citizens Casino Advisory Task Force. 2003. *Report of the Economic Development Subcommittee*.

direct employment, it can be expected that induced employment and new residents would be less concentrated in Bristol and Plymouth County communities, and therefore, the municipalities in the immediate vicinity of the proposed casinos would incur proportionately less impacts from induced employment compared to the employee estimates for direct employment. In addition, because a high percentage of the induced employment would be absorbed by underemployed persons at existing businesses performing under capacity, there would be proportionately less new businesses and residents from induced growth, thereby lessening the new demand for community services.

8.20.3.3 Visitor-Related Induced Effects

When in full operation, the Proposed Development (Alternative A) is expected to attract an estimated 5.3 million visitors per year. These visitors would be expected to spend money in the local and regional economies on transportation, food, lodging, and entertainment while traveling to and from their homes to the project area, and while visiting, exploring, and partaking in other tourist activities in the local area.

As discussed in **Section 8.1**, a large proportion of the Project's 5.3 million annual visitors would access the site by bus, with the remaining visitors arriving and departing by private automobile. The majority of the visitors would use Route 24, coming either from I-195 to the south or I-495 to the north. The remaining visitors would use various other minor routes and the local roadway systems. The Proposed Development is expected to generate over 10,000 incoming automobile trips per day, representing substantial visitor and tourist spending potential.

Of the casino visitors, those arriving and departing on chartered buses represent the least likely visitors to induce growth in the local and regional economies. The nature of casino charter bus transportation is to leave and pick-up patrons at the casino location, providing little opportunity for these patrons to spend outside the confines of the casino property itself. As a result, the spending associated with bus visitors has little growth inducing effect.

In contrast, casino visitors arriving via private automobiles represent a mobile source of potential spending and have greater potential for growth inducing activity. Because most patrons are likely to be within a two hour driving distance of the project, they would be able to spend in the local and regional economy on travel-related goods and services, especially gasoline, and secondarily on off-site lodging, food, and entertainment.

The Proposed Development will encompass several restaurants, offering patrons dining opportunities integrated into the overall casino/entertainment experience. As such, many visitors to the project would be expected to dine on site. Snacks for travel home from the casino would represent an area of economic activity and potential induced growth for off-site businesses.

Despite the on-site dining opportunities, casino patrons in the numbers expected to visit the project will create a potential market for the expansion and creation of local restaurant businesses. It is anticipated that the potential demand for high-quality dining and restaurant experiences resulting from the presence of casino visitors would stimulate investment in the upgrade and enhancement of existing restaurants, and

the establishment of new high-quality restaurants aimed at attracting casino patrons. These investments would represent important economic development and downtown revitalization forces in Taunton.

Regional economic improvement, downtown revitalization, and overall increased local business activity in the local economy will, to some degree, depend on the local business investment and marketing. Capturing visitor spending requires an economic infrastructure that will entice casino visitors to venture into nearby business centers and spend money in local businesses. Without such, these visitors will spend elsewhere.⁴ As discussed throughout this analysis, the presence of the proposed project would stimulate economic activity via the Proposed Development's operations and the wages and salaries earned by its employees, but the opportunities to leverage the unrealized benefits of this project are substantial. Overall, the economic effect of the Proposed Development on the local and regional economy is expected to be positive, as it would represent a major construction project, it would be a major new employer of workers, and would be a new tourist and entertainment venue.

⁴ Kurth, Michael, et. al. 1999. The Impact of the Proposed Choctaw Casino on the Economy of Southwest Louisiana.

SECTION 8.21

CUMULATIVE EFFECTS

8.21.1 INTRODUCTION

Cumulative effects are defined as effects to the environment resulting from the incremental effect of the Proposed Action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative effects can result from individually minor but collectively significant actions taking place over a period of time (40 CFR 1508.7).

A cumulative effects analysis broadens the scope of analysis to include effects beyond those attributable solely to the implementation of the alternatives. The purpose of the cumulative effects analysis, as stated by the Council on Environmental Quality (CEQ) “is to ensure that federal decisions consider the full range of consequences” (CEQ, 1997:3). The process of analyzing cumulative effects, or impacts, requires consideration of cumulative effects issues in each of the traditional components of the Environmental Impact Statement (EIS), including scoping, describing the affected environment, and determining environmental consequences. The incorporation of cumulative effects analysis also aids in the development of alternatives and appropriate mitigation measures.

A cumulative effects analysis expands or reduces the geographic and temporal study areas to adequately and appropriately analyze the effects of the project alternatives depending on the specific resource being analyzed.

Growth and development trends are an important part of the cumulative analysis and help to define the geographic borders and time frame of the analysis. The discussion of the cumulative environment includes a list of related actions and projects. Focus is placed on specific actions or programs known or suspected to potentially result in significant impacts facilitates the cumulative impact analysis.

As recommended by CEQ’s Considering Cumulative Effects, not all potential cumulative effects issues have been included in this EIS, only those that are considered to be relevant or consequential have been discussed in depth (CEQ, 1997:12).

The cumulative analysis begins with defining geographic borders and time frame of the analysis. Secondly, the cumulative environment is described in terms of expected growth as well as past, present, and future actions and projects that may affect the status of the resources, ecosystems, and human communities in the project area. The discussion of the cumulative environment includes a summary of projected growth and a list of related actions and projects.

8.21.2 GEOGRAPHIC SCOPE OF ANALYSIS

The geographic boundary for the cumulative analysis is defined differently depending on the type of impact being considered. For socio-economic purposes, as well as public services, the study area is defined as Plymouth and Bristol Counties (See **Figure 7.16-1**). The study area for land use cumulative effects was designed to match that of the socio-economic analysis and therefore is also Plymouth and Bristol Counties.

For traffic and transportation purposes, the study area was based on input from the Massachusetts Department of Transportation via the MEPA process and includes the roadways and intersections in the local network in portions of Taunton, Raynham, Berkley, Bridgewater, Lakeville, and Middleborough as shown on **Figures 7.1-2 and 7.1-3**. For purposes of air quality and greenhouse gas (GHG), the cumulative effects study area is based on the traffic network and so matches that of the transportation study area.

The cumulative effects study area for water resources is simply the water supply for Taunton, which consists of the Assawompset Pond Complex in Lakeville, Middleborough, Rochester and Freetown, (see **Figure 7.7-1**) and the Dever Wells located in Taunton.

8.21.3 TEMPORAL EXTENT OF ANALYSIS

The time frame for the cumulative effects analysis generally extends to the year 2022, an exception being the traffic analysis which looks ahead to the year 2032. Beyond a 10-year timeframe, information on growth patterns and future development activities becomes increasingly speculative. Additionally, the masking of significant impacts by extension of the temporal limits reduces the usefulness of a more extended cumulative analysis. For many resources, information is unavailable to extend meaningful analysis even as far as 2022; however, attempts have been made to provide all relevant information.

8.21.4 CUMULATIVE ENVIRONMENT

The Project Site is located in the eastern part of Taunton, a city with a population of roughly 56,000 and an area of 48.4 square miles. Taunton is bordered by Rehoboth and Norton on the west; Easton on the north; Raynham and Lakeville on the east; and Berkley and Dighton on the south. Taunton is 14 miles north of Fall River (2011 estimated population 88,962), 33 miles south of Boston (2011 estimated population 625,087), and 16 miles from Providence, Rhode Island (2011 estimated population 178,053). The Project Site is roughly in the center of Bristol and Plymouth Counties which have a combined estimated 2011 population of roughly 1,046,000 and a combined land area 1,212 square miles.¹ Southeastern Massachusetts' population is growing. Taunton is within the Southeast Regional Economic

¹ U.S. Census Bureau. State and County QuickFacts: Bristol County, MA. Information retrieved at: <http://quickfacts.census.gov/qfd/states/25/25005.html>.

U.S. Census Bureau. State and County QuickFacts: Plymouth County, MA. Information retrieved at: <http://quickfacts.census.gov/qfd/states/25/25023.html>.

and Planning Development District (SRPEDD), which includes 27 communities in southeast Massachusetts. The population of the SRPEDD region grew from 597,294 in the year 2000 to 616,670 in 2010. It is projected to continue to grow to an estimated 653,000 in 2020 and 698,000 by 2030.²

Southeastern Massachusetts includes a mix of urban, suburban, farm, and rural undeveloped areas. The most significant natural area proximate to the Project Site is the 13,600-acre Southeastern Massachusetts Bioreserve, which combines the Freetown State Forest, Copicut Wildlife Management Area, The Trustees of the Reservation's Copicut Woods, and eastern parts of Fall River's watershed lands, including the Copicut Reservoir. The Bioreserve is managed to preserve the functionality of a large-scale ecosystem and promote biodiversity, and protect water supplies. The Bioreserve is approximately seven miles south of the Project Site. Other notable nearby natural areas include Massasoit State Park, an approximately 1,500-acre park managed by the MA Department of Conservation and Recreation (DCR), approximately two miles east of the Project Site; and the Assawompset Pond Complex approximately three miles east of the Project Site. The Assawompset Ponds Complex comprises Assawompset, Pocksha, Great Quittacas, Little Quittacas and Long Ponds. Long Pond is heavily developed and the only one in the complex open to public recreation. Assawompset and Long ponds are the two largest natural water bodies in Massachusetts and serve as the public water supply for Taunton and New Bedford.

The Proposed Development would occur within the context of other projects in the region that have been built recently or are currently being planned for construction. The following sections discuss other reasonably foreseeable projects in the region that could have an interaction with the Proposed Development and result in cumulative effects.

8.21.4.1 Previous Site Development at the LUIP

The CEQ regulations require that the cumulative effects analysis also examine past actions; therefore, the previous development at the LUIP is considered since the Proposed Action's impacts will be additive to those that have already occurred at the site.

The LUIP was reviewed under MEPA via a total of seven MEPA filings including:

- An ENF filed in October 2001 for the East Taunton Industrial Park that included only the area west of Stevens Street, what is now considered Phase II of the LUIP;
- A Draft EIR filed in March 2002 that added the area east of Stevens Street, what is now referred to as Phase I of the LUIP;
- A Final EIR filed in July of 2002, that was found to be inadequate by EEA;
- A Supplemental Final EIR filed in December 2002, that was found to be adequate by EEA; and
- Three Notices of Project Change (NPC) filed in October 2003, April 2005, and October 2005. The April 2005 added a Phase III component to the LUIP on a parcel north of Middleborough Avenue which was then dropped in the October 2005 NPC.

² Southeast Regional Planning and Economic Development District. Population. Available at <http://www.srpedd.org/data/data/POPULATION.pdf>.

- The last Certificate issued by EEA was issued January 6, 2006 in response to the October 2005 NPC. That Certificate found that potential impacts did not warrant the preparation of a further Supplemental EIR.

Phase I

Phase I of the LUIP, which is on the south side of Stevens Street north of Route 140, is accessed from Revolutionary Drive opposite O'Connell Way. Phase I has been largely constructed. Development is predominantly in warehouse use. Existing development includes the following:

- an approximately 800,000 square-foot warehouse facility (Jordans Furniture) at 450 Revolutionary Drive, which opened in 2005;
- An approximately 10,000 square-foot building (Skyline Contractors) at 400 Revolutionary Drive;
- an approximately 62,000 square-foot office (Super Coups) at 350 Revolutionary Drive;
- an approximately 138,000 square-foot warehouse and office building (Revolutionary Way Commerce Center) built in 2006.
- an approximately 18,000 square-foot warehouse occupied by RC&D Inc, at 147 Revolutionary Drive; and
- an approximately 7,500 square-foot building used by a landscaping company at 100 Revolutionary Drive.

Phase II

The proposed Project Site is partially within what was designated Phase II of the LUIP. In addition to O'Connell Way, other development with that has been constructed within Phase II of the LUIP includes the Crossroads Commerce Center. The Commerce Center is located at the cul-de-sac on the north end of O'Connell Way and consists of two large warehouse buildings, approximately 155,000 square feet and 175,000 square feet in size. They were completed in 2008.

Other Development

Other development on and in the vicinity of the Project Site includes the buildings that are not officially within the boundaries of the LUIP and therefore were not included in the MEPA filings include:

- 50 O'Connell Way (Maggiore Industrial Building);
- 60 O'Connell Way (Maggiore Industrial Building);
- 73 Stevens Street (Office/Retail, Partial Occupancy);
- 71 Stevens Street (Tardie Warehouse Building); and
- 61R Stevens Street (Construction Business).

These buildings will either be adaptively reused as part of the project or razed to accommodate new construction.

LUIP Impacts

The January 6, 2006 Certificate issued by EEA in response to the NPC summarized the expected combined impacts of Phases I and II of the LUIP. Combined wetland impacts were estimated to be approximately 9,600 square feet. Impacts that have occurred thus far on-site due to the construction of Revolutionary Drive, O'Connell Way, and other development on-site have been reviewed by the Taunton Conservation Commission pursuant to the MA Wetlands Protection Act and by the Army Corps of Engineers, and any wetland filling that has occurred has been mitigated for through the creation of new wetland on site.

8.21.4.2 Barstows Pond Dam Removal

Barstow Pond is an approximately 12-acre pond located on the western edge of the proposed Project Site, on the parcel north of the railroad. It is formed by a dam near Middleboro Avenue that impounds the Cotley River. The owner of the dam, the Taunton Development Corporation (TDC) has filed an ENF (EEA No. 14750) with the MEPA Office, proposing to remove the dam.

According to the ENF, the dam was built in the 1800s and is comprised of a 30-foot long timber crib spillway on the west end of the dam, a 5-foot long stone lined sluiceway on the east end of the dam, separated by a 57-foot long center earthen embankment. The dam is approximately 2,000 feet north of the confluence of the Cotley River and the Taunton River, which is a National Wild and Scenic River that eventually flows to Narragansett Bay. The Massachusetts Department of Conservation (DCR) Office of Dam Safety has classified the dam as a Significant Hazard Potential, the failure of which has the potential to cause loss of life and damage to property. The TDC, in conjunction with the Massachusetts Division of Ecological Restoration (DER), Save the Bay (a non-profit conservation group), and the National Oceanic and Atmospheric Administration (NOAA) Restoration Center, have proposed to remove the dam as part of a larger effort to restore the natural riverine habitat and migration of native diadromous fisheries such as alewife and blueback herring along the Cotley River and its connection to the Taunton River and Narragansett Bay.

The dam's removal will result in the conversion of Barstows Pond open water habitat to emergent marsh and scrub/shrub wetlands to forested wetlands and upland forest. The amount of BVW is expected to increase by 10.5 acres through this conversion. At the same time, the likelihood of flooding will be reduced. In addition, the project will improve fisheries habitat and open approximately ten miles of stream habitat currently not available to migratory fish.

The proposed dam removal has also been approved by the Taunton Conservation Commission which issued an Order of Conditions approving the dam removal in June 2012.

8.21.4.3 Other Projects of Regional Significance

Specific projects that are planned in the region that have the greatest potential to result in cumulative effects include both private developments projects and public transportation projects. Projects closest to the Proposed Casino Development have the greatest likelihood for cumulative effects. The following sections describe known planned developments in the vicinity of the Project Site.

The Massachusetts Environmental Policy Act (M.G.L. c. 30, sections 61 through 62H, inclusive) (MEPA) is similar to NEPA in its procedures and purpose. MEPA requires that state agencies study the environmental consequences of their actions, including permitting and financial assistance. MEPA applies to private projects that exceed MEPA review thresholds and that require a state agency action, such as a permit, financial assistance, or land transfer from state agencies. MEPA typically requires that a proponent prepare an Environmental Impact Report (EIR), which is similar to an EIS, for large scale development projects because they are likely to have significant environmental impacts. Therefore, a review was made of other projects in the vicinity of the Proposed Development that have recently or are currently under MEPA review. The area examined included Bristol County and the western portion of Plymouth County. Projects in eastern Plymouth County were not included because they would be unlikely to be accessed from the same roadways and are in separate watersheds than is the proposed casino.

Table 8.21-1 summarizes these projects.

The majority of the projects listed are residential subdivisions and/or mixed use commercial developments. There are also a number of utility projects including power plant projects in Attleboro and Brockton and two transmission line upgrade projects within Carver and surrounding communities. Projects subject to MEPA review must complete the MEPA process before receiving state permits. MEPA also requires project proponents to take all feasible measures to avoid, minimize, and mitigate “damage to the environment”. It can be assumed that any of these projects that do proceed to construction will have therefore have minimized and mitigated impacts to traffic, wetlands, stormwater, rare species, wastewater, and cultural resources.

Of all the projects listed in **Table 8.21-1**, the two in Taunton, i.e., the Myles Standish Industrial Park Expansion and the improvements to the Taunton Municipal Airport, simply because they are most proximate to the proposed casino Project Site, are those most likely to result in cumulative effects with the Proposed Project. More detail on these two projects is provided below.

**TABLE 8.21-1
PROJECTS UNDERGOING MEPA REVIEW³**

MEPA #	Name	Town	Address	Description	MEPA Documents	Date
14924	Mashpee Wampanoag Tribe Proposed Casino.	Taunton	Stevens Street/O'Connell Way	Casino, 900-room hotels, retail, restaurant	EIR Required	2012
14527	Myles Standish Industrial Park Expansion	Taunton	Former Paul A. Dever State School Campus, between Constitution Dr. and Bay St.	1.3 to 1.8 million square feet, approximately 300,000- to 500,000-square-foot Life Science Center/Technology Park	FEIR	2012
14495	Taunton Municipal Airport Improvements	Taunton	Westcoat Drive, East Taunton	Safety and capacity improvements	EIR Required	2011
12950	Hunters Hill	Dighton	Anderson Cove	140-lot residential subdivision	FEIR	2007
14584	Attleboro Clean Energy Project	Attleboro	527 Pleasant Street	7MW Gas co-generation facility	EIR submitted	2010
14610	Norton Commerce Center	Norton	Hill Street	486 ksf on 54 acres of commercial development	NPC	2012
14266	Queset Commons	Easton	Intersection of Routes 38 and 123	Mixed use	FEIR	2012
14464	Crimson Estates	Middleborough	Spruce Street	Residential 97lots on 160 acres	EIR Required	2009
14919	Gateway Commons Commercial Development	Lakeville	5 Harding Street	62,000 sf Retail and 290 parking spaces	EIR Required	2012
13709	Christina Estates	North Attleboro	Cumberland Avenue/Cushman Rd/Remington Drive	Residential 97 lots on 160 acres	EIR Required	2007
14817	Retail Development	Seekonk	1300 Fall River Ave	158,000 sf Walmart + out lots, 23-acre site	FEIR	2012
13450	Greenbriar Condominiums	Seekonk	Route 114A and Howland Street	440 Units of Residential	FEIR	2009
14262	Swansea Commons	Swansea	Route 6	304,000 square feet Commercial	SEIR	2008
14697	Meditech Office	Freetown	South Main Street	187,000 square foot Office on 138-acre site	SEIR	2011
14459	Crossroads at 24	Fall River	Brayton Avenue and Jefferson Street	291,000 retail, 3,900 sf restaurant	FEIR/NPC	2010/2012
14346	South Coast Rail	Boston to Fall River/New Bedford		Approximately 60 miles of new commuter rail service	DEIR	2011

³ Information gathered from MEPA online Project Information System in December 2012. Available at <http://www.env.state.ma.us/mepa/searcharchive.aspx>.

**TABLE 8.21-1
PROJECTS UNDERGOING MEPA REVIEW⁴ (CONTINUED)**

MEPA #	Name	Town	Address	Description	MEPA Documents	Date
14838	First Bristol Mixed Use Center	Westport	829 American Legion Highway	Mixed use - medical office, gas, retail	DEIR	2012
13862	The Village at Lincoln Park	Dartmouth	State Road	57 single family residential units, bank, restaurant, retail, commercial, and 32 apartments	EIR Required	2011
13745	Rehabilitation of the New Bedford Fish Pier	New Bedford	MacArthur Drive	Pier Rehabilitation	FEIR	2008
14424	Renaissance Village	Brockton	60 Main Street	Mixed use, 308 residential, 7,700sf commercial, and 4,500sf retail	EIR Required	2009
14017	Brockton Power	Brockton	Oak Hill Way	350MW Gas turbine, combined cycle power plant	EIR	2008
14320	The Village at West Bridgewater	West Bridgewater	Lincoln Street	Mixed use, 382,000 sf commercial/retail	EIR Required	2008
13802	Childs Bridge Farm II	Bridgewater	Cherry Street	97-lot subdivision on 144 acres	SEIR	2007
14801	Plymouth Municipal Airport Safety	Plymouth/Carver South Meadow Road		Airport safety improvements	EIR	2012
14654	Lower SEMA 345 kV Transmission Line	Carver to Bourne	N/A	345KV Transmission Line	FEIR	2011
14030	Line 134 and Substation	Carver, Middleboro, Rochester, Wareham	N/A	Electric Transmission Line	FEIR	2007
13940	ADM Tihonet Mixed Use Development	Carver/Plymouth/Wareham	N/A	Mixed Use 345,000 sf office/retail/residential and two solar energy installations 3.6 and 0.5 MW.	FEIR	2011
13975	Connet Woods	Rochester	High Street and Ryder Road	115-lot subdivision on 566-acre site	SEIR	2007
14634	Retail Development (Walmart)	Wareham	Tobey Road and Route 28	176,500 sf commercial on 26-acre site	FEIR	2012

⁴ Information gathered from MEPA online Project Information System in December 2012. Available at <http://www.env.state.ma.us/mepa/searcharchive.aspx>.

Myles Standish Industrial Park

The Myles Standish Industrial Park (MSIP) is located on the west side of Lake Sabatia and Watson Pond, just south of Exit 9 of I-495 in Taunton, approximately six miles from the Tribe's proposed casino Project Site. A final Environmental Impact Report (FEIR) for the MSIP's expansion was filed with the MEPA Office in October 2012 (EEA # 14527). The Secretary of Energy and Environmental Affairs issued a Certificate on the FEIR on November 12, 2012. According to the FEIR, the proposed expansion of the Park will redevelop a portion of the Dever State School to expand the existing MSIP by approximately 1.3 to 1.8 million square feet and create an approximately 300,000- to 500,000-square-foot Life Science Center/Technology Park. Construction of Phase I, which includes the development of up to 250,000 square feet of industrial park buildings, is underway. Full build-out, which will involve an additional approximately 1.15 to 1.55 million square feet of industrial park space and approximately 300,000 to 500,000 square feet of space for the Life Science Center/Technology Park is expected to occur in additional phases.

Impacts from the project and proposed mitigation measures are reported in the FEIR.

- The MISP expansion will not directly impact any wetlands;
- Stormwater management systems have been designed to comply with the Stormwater Standards contained in the MassDEP Massachusetts Stormwater Handbook and achieve post-Project peak runoff rates at or below existing rates.
- The MISP expansion will have a water demand of 169,850 gpd and generate 145,500 gpd of wastewater. The project includes the construction of new water distribution and sewage collection systems on the site. In accordance with the City of Taunton's CWMP, the project will eliminate I/I into the municipal sewer system at a ratio of five gallons I/I removal to every one gallon of new sewer flow.
- With regard to GHG emissions, the project proponent will employ covenants and restrictions to encourage future developers on the site to consider energy-efficient technologies and designs to reduce GHG emissions.
- With regard to air quality, the project will result in some increases to (VOC) emissions and nitrogen oxide (NOx) emissions compared to a No-Build condition. Proposed transportation mitigation measures will help to minimize these increases.
- The MISP expansion is expected to generate approximately 12,306 vehicle-trips per day. The proponent has proposed roadway widening, signal timing modifications, and installation of new traffic signals at several intersection to address traffic impacts. The proponent will also implement a comprehensive TDM program to further reduce daily trips.

Taunton Municipal Airport

As described in the Environmental Notification Form (ENF) for the project, The Taunton Airport Commission (Commission) is proposing safety and capacity improvements to be built over the next five

to seven years. The projects would address the current safety and capacity needs to maintain the Airport's facilities, as well as to develop facilities to meet future anticipated needs.

Short term proposed projects include rehabilitation of Runway 4-22 (Turf Runway) and Realignment of the connector taxiway (turf taxiway); construction of hangars and aprons; and grading the southside parcel for future development. The proposed long-term capacity improvements include construction of taxiway access to the Southside Development; and the development of the Southside Parcel for Hangars.

According to the ENF, a preliminary evaluation of impacts to wetlands associated with construction of hangars and aprons is estimated to range between 18,000 square feet and 57,000 square feet depending on the site. Additional analysis of alternatives for the hangars will be completed for the Draft EIR prepared for MEPA.

Based on concept designs and conservative assumptions, it is estimated that a taxiway to access the Southside would alter approximately 5,000 square feet of bordering wetland vegetation (BVW). However, additional BVW (approximately 15,000 square feet) would be impacted as part of the vegetation management within the Taxiway Safety Area which would require a Variance from the MA Wetlands Protection Act. A wildlife habitat evaluation would be completed because the bank impacts are estimated to be over 50 linear feet. Wetland mitigation would be provided on-site.

8.21.4.4 Highway and Transit Projects

As described in **Section 8.1.2.2**, there are a number of regional transit and highway improvement projects that are expected to move forward regardless of whether the Tribe's Proposed Development is built. These include the following projects:

- South Coast Rail Project, which seeks to establish commuter rail service between New Bedford/Fall River and Boston's South Station;
- Improvements to Hart's Four Corners (Route 140/Hart Street intersection) in Taunton;
- The reconstruction of the Route 24/140 Interchange;
- The reconstruction of Route 140 between Route 24 and Taunton Depot Drive;
- Improvements to the Middleborough Rotary at the intersection of Routes 18, 28, and 44; and
- Signal and intersection improvements at the intersection of Route 44, Orchard Street, and the Route 24 northbound exit ramp in Raynham.

These projects are described in detail in **Section 8.1.2.2** and, with the exception of the reconstruction of the Route 24/140 Interchange have been incorporated into the transportation model for future years. All will have a beneficial impact on traffic operations.

8.21.4.5 Other Proposed Casino Projects

Under the Massachusetts Expanded Gaming Legislation (Ch.194 of the Acts of 2011), the Commonwealth intends allow gaming in the state and will license three resort casino and one slot

machine establishment. With regard to the casinos, the state has been divided into three regions, each of which will be allowed to have one casino:

- Region A: Suffolk, Middlesex, Essex, Norfolk and Worcester Counties;
- Region B: Hampshire, Hampden, Franklin and Berkshire Counties; and
- Region C: Bristol, Plymouth, Nantucket, Dukes and Barnstable Counties.

The Proposed Project is presumed to be the casino that will be built in Region C. The Massachusetts Gaming Commission received three applications for a casino license in Region A. One casino is proposed for Boston, one in the abutting community of Everett, and one in the town of Milford which is approximately 35 miles by automobile from the Tribe's proposed casino Site. Four license applications were received for Region B in the western part of the state, including two in Springfield, one in West Springfield, and one in Palmer. Two applications for the slot machine parlor license were received, one in Raynham at the former Raynham Dog Track and the other at the Plainridge Racecourse in Plainville. Both locations are relatively near the Tribe's proposed casino Site. The Raynham site is approximately 12 miles from the Tribe's proposed casino Site, while the Plainridge site is approximately 24 miles away. The Gaming Commission also received two other license applications for either a slot parlor or casino at undesignated locations.

The Expanded Gaming Legislation requires that the licensing fee for commercial casinos be at least \$85 million and capital investment, including a hotel facility, must be at least \$500 million. The Commonwealth will receive 25 percent of gross gaming revenues from each commercial casino. The slots facility, which will hold up to 1,250 slot machines, will cost at least \$25 million, and capital investment must be at least \$125 million. The Commonwealth will receive 40 percent of gross gaming revenue on the slots facility.

The three proposed casinos in Region A and the four proposed casinos in Region B would all be too distant from the Tribe's proposed casino Site for there to be cumulative effects to the natural environment. Therefore, they are not considered. The same would be true for the proposed slot parlor in Plainville. The proposed slot parlor in Raynham, however, is close enough to the Tribe's proposed casino Site, that cumulative effects to the natural environment are considered.

According to news reports, Raynham Park contains approximately 80 acres of buildable property. A first phase of a Raynham Park slots parlor would include an entertainment venue, restaurants and bars. Later phases could include a movie theater, hotel, and bowling alley. The site abuts and is constrained by the Hockomock Swamp complex, a state designated 16,950-acre Area of Critical Environmental Concern (ACEC), that surrounds the site on three sides. The Hockomock Swamp and associated wetlands and water bodies comprise the largest vegetated freshwater wetland system in Massachusetts. The wetlands act serve as the headwaters for the Town River, which flows into the Taunton River. Approximately 13 rare and endangered species are found in the Hockomock Swamp ACEC. Overall, the site is very constrained by these environmental areas adjacent to the developable area outside the ACEC that is already disturbed, thus it is very likely the proposed program will stay within the footprint of the currently developed area.

Other casino facilities in the state would be competitors in the recreation/gaming market and have the potential cumulative effects to the social and economic environment. Therefore, they are considered in the socioeconomic cumulative effects analysis.

8.21.5 SIGNIFICANCE OF CUMULATIVE EFFECTS

Some actions, which result in individually insignificant impacts, may have significant impacts when cumulative, synergistic or additive effects are considered. This is particularly the case when impacts pass a threshold, for example, such as causing a level-of-service (LOS) failure at an intersection or a nonconformity determination under the Federal Clean Air Act (CAA).

General growth may be regarded by the public as an adverse impact or it may be viewed as a sign of economic and community progress. Generally, growth is simply a part of the cumulative environment rather than an effect or result. However, a shift to unplanned and unregulated growth could be considered a significant impact.

8.21.6 ALTERNATIVE A: PROPOSED DEVELOPMENT

The effects of the above noted projects, analyzed in conjunction with Alternative A, are presented below. Effects are described for each of the subject areas of the environment describe in other portions of this EIS.

8.21.6.1 Transportation

The traffic analysis presented in **Section 8.1** looked at Study Area roadway and intersection operations for a 2022 design year. That analysis did not take into account the specific transportation improvements described in **Section 8.1.2.2** because their final plans and implementation schedule are not known. It is assumed that all would have positive impacts to operations and safety.

In response to comments by MassDOT during Scoping, the cumulative effects analysis focuses on the operations of the Route 24/140 Interchange in the year 2032. For purposes of the analysis, it was assumed that the Route 24/140 reconstruction project had been completed as it is shown in **Figure 8.1-3**. Under this scenario, called Option 1D, the Route 24 Southbound off-ramp is proposed to split from the mainline in two lanes, one to a new ramp to Route 140 northbound and the other to Route 140 Southbound. The ramp to Route 140 Southbound would enter Route 140 in its own lane, outside of a signal as currently exists today. Route 140 under Route 24 would be widened to seven lanes (from four lanes today) to accommodate a northbound double left to Route 24 Southbound and a double through on Route 140 Northbound. Route 140 Southbound would have a divided single off-ramp lane from Route 24 Southbound divided with a median barrier from two through lanes to Route 140 Southbound and a transition to a double left turn to the Route 24 Northbound ramp. Route 140 Northbound between Interchange 11 (Stevens Street) and Route 24 would be widened to the north to provide three lanes (currently two lanes with an auxiliary lane transition from the Stevens Road on-ramp). Exit 11A to Stevens Street at the Galleria Mall Drive would become signalized.

The following explains the 2032 Build operating conditions with the addition of the MassDOT Option 1D and the Proposed Development's generated traffic volumes.

During the Friday PM peak hour, the mainline volume north of the Exit 12 off-ramp will experience an increase of 465 vehicles for a total of 4,739 vehicles. During the Friday PM peak hour, the Route 24 Southbound mainline will continue to operate at LOS F, with a density of 50.2 passenger cars per mile per lane (pc/mi/ln) as a result of the increase in vehicles from the Proposed Development's generated traffic. This location will operate at LOS C during the Friday AM, Saturday Midday, and Saturday PM peak periods.

During the Friday PM peak hour, the Route 24 southbound ramp to Route 140 SB will experience an increase of 465 vehicles for a total volume of 1,817 vehicles. During the Friday PM peak hour, the Route 24 Southbound diverge at Exit 12 will experience an increase in density from 36.9 to 37.9 pc/mi/ln and worsen from LOS E to LOS F, as a result of the increase in vehicles from the Proposed Development's generated traffic and the one lane off-ramp being over capacity. This location will operate at LOS B during the Friday AM peak period, and LOS C during the Saturday Midday and Saturday PM peak periods.

During the Friday PM peak hour, the proposed MassDOT ramp will experience approximately 271 vehicles. During the Friday PM peak hour, the proposed Mass DOT exit ramp to Route 140 North will continue to operate at LOS F with a density of 33.9 pc/mi/ln as a result of the increase in vehicles from the Proposed Development's generated traffic. This location will operate at LOS B during the Friday AM and Saturday PM peak periods, and LOS C during the Saturday Midday peak period.

The proposed MassDOT Option 1D ramp will not adversely impact the mainline due to the low volume of vehicles that will use it. However, the mainline of Route 24 upstream of the diverges will continue to operate poorly due to the lack of mainline capacity.

8.21.6.2 Floodplain, Wetlands and Other Waters of the U.S.

As described in **Section 8.2**, the Proposed Development is expected to result in approximately 0.5 acres of permanent direct wetland impact (i.e., wetland filling) and approximately 0.36 acres of temporary impact during construction. As described in **Section 9.2.2**, compensatory mitigation for unavoidable impacts to wetlands and other waters of the U.S. will be provided in accordance with the ratios contained in the "Revision of New England District Compensatory Mitigation Guidance (Corps; July 20, 2010) under any of the Alternatives involving the BIA taking the Project Site into trust on behalf of the Tribe. The Tribe will consult with the Corps regarding the details of the proposed compensatory mitigation plan. The preferred approach would be to create or enhance wetlands on the Project Site and/or proximate to each impact location at the proposed Route 140 Northbound Entrance Ramp and Route 24/140 Intersection at an agreed upon mitigation ratio.

Other wetland impacts in the vicinity of the Proposed Development expected to occur as a result of other projects in the vicinity will include the following:

- an increase of approximately 10.5 acres of bordering vegetated wetlands as result of the conversion of the Barstows Pond impoundment to a river and floodplain habitat;
- filling of approximately 5,000 square feet of wetland and vegetation management in another 15,000 square feet for the improvements to the Taunton Municipal Airport.
- The reconstruction of the Route 24/140 Interchange will also likely result in wetland filling, however, the amount is not known.

The Barstow Dam Project will have a beneficial ecological impact and has been approved by the Taunton Conservation Commission. The Taunton Municipal Airport Project and the Route 24/140 Interchange Project will both undergo environmental review under NEPA (assuming federal funds are used for both projects), MEPA, as well as federal and state wetland permitting. It can be assumed therefore that both projects will avoid, minimize, and mitigate appropriately for wetland impacts.

The Proposed Development's wetland impacts are relatively minor (less than one acre) and will be mitigated for in accordance with USACE policy. Similarly, other nearby projects identified in this cumulative effects analysis are not expected to have significant wetland impacts and unavoidable impacts are expected to be mitigated appropriately. Therefore, no significant cumulative wetlands impacts are expected.

8.21.6.3 Stormwater

The stormwater management system for the Proposed Development includes upgrades and improvements, described in **Section 8.6** to the existing stormwater infrastructure. These upgrades and improvements include the introduction of a number of new best management practices (BMPs) to collect and treat stormwater runoff, as prescribed in MassDEP's "Structural BMP Specifications for the Massachusetts Stormwater Handbook, Volume 2, Chapter 2." These BMPs include both low impact development (LID) techniques and structural measures providing stormwater quantity and quality management. Collectively, these BMPs will function to avoid and minimize potential adverse water quality impacts to the Cotley River and adjacent wetlands and waters of the U.S.

Other projects in the vicinity of the Proposed Development that also drain to the Cotley River include the reconstruction of the Route 24/140 Interchange, which MassDOT is planning in the future. That project will be subject to MEPA review as well as the MA Wetlands Protection Act and Section 404 of the Clean Water Act. It will also likely require a federal NPDES permit for construction. Therefore, it can be assumed that stormwater impacts from that project will be in compliance with DEP's Stormwater Handbook and NPDES requirements that are protective of stormwater quality. Therefore, no cumulative adverse impacts affecting the Cotley River water quality are expected.

The preliminary hydrologic analysis presented in **Section 8.3.2** indicates that the stormwater management system design for the Project Site under the Proposed Development will meet or reduce peak runoff rates for the 2-, 10- and 100-year, 24 hour, Type III storm events compared to the pre-developed levels. In addition, the removal of the Barstows Pond Dam will also increase flood storage capacity in the Cotley river upstream of the Taunton River. As described in the previous paragraph, the reconstruction of the

Route 24/140 Interchange will be undertaken by MassDOT and will undergo full environmental review at the state and federal level. It can be assumed that it will be designed to control stormwater runoff. Because the Proposed Development and other nearby projects are not expected to result in increase stormwater runoff, no adverse flooding cumulative effects are expected.

8.21.6.4 Geology and Soils

The Proposed Development will involve clearing and grading. Topographic features of the Site will be altered by earthwork; however, due to the relatively flat nature of the Site and the prior grading and earthwork that has occurred, the general topographic features of the Project Site will be preserved. No other projects in the immediate vicinity are expected to significantly alter topography. The proposed removal of the Barstows Pond Dam will result in a change in habitat but is not expected to alter topography.

Construction could cause erosion during clearing, grading, trenching, and backfilling. As discussed in **Section 8.4**, the use of appropriate soil erosion and sediment control techniques will minimize the potential for erosion and sedimentation. A soil erosion and sediment control plan will be developed during design consistent with the NPDES General Permit for stormwater discharges associated with construction activities. The removal of Barstow Dam will likely result in some erosion and sedimentation. According to the ENF filed for the dam removal, approximately 4,400 cubic yards of the estimated 18,430 cubic yards of sediment impounded by the dam is expected to be transported downstream as a result of the dam removal. This will be a single occurrence and the newly exposed soils that will be created by the lower water elevation are expected to revegetate and stabilize naturally.

This Alternative will impact approximately 15.6 acres of currently undeveloped Prime Soils and approximately 7.9 acres of currently undeveloped State Important Soils. These soils represent a portion of currently constructible land within the Project Site. These soils are not currently being utilized for agriculture; therefore these soils will not be impacted by a change in *agricultural* use. Previous development within the LUIP also resulted in the loss of some farmland. These impacts to farmland were considered during the MEPA review of the LUIP project and mitigation for losses of farmland soils for the LUIP site were committed to by the proponent (the Taunton Development Corporation) previously. In the Final EIR submitted to the MEPA Office in 2002, the TDC agreed to finance an Agricultural Preservation Restriction with a landowner in the City of Taunton or to make a monetary contribution to the City's APR fund. Therefore, in effect, this loss of farmland soils has been previously mitigated for.

8.21.6.5 Rare Species and Wildlife Habitat

The project will have no adverse effects on threatened or endangered species. According to U.S. Fish and Wildlife Service (USFWS) data, there are no known federally listed species at or proximate to the Study Area and limits of the Proposed Development. It is assumed that other projects considered in the

cumulative analysis will comply with applicable federal and state laws protecting endangered species and so pose less than significant effects on federally listed species. Therefore Alternative A would not result in significant cumulative effects to federally listed species.

The majority of the construction associated with the Proposed Development will occur in previously disturbed areas, particularly for that portion of the Project Site south of the railroad tracks. Within the area north of the railroad, a substantive portion of the impacts to existing vegetative communities will affect previously disturbed (i.e., old field, agricultural) communities. Secondary impacts to upland forest communities associated with the Cotley River would be minimal, particularly with respect to the existing extent of available upland forested habitat along the riparian corridor. Impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 have been minimized to the maximum extent practicable and existing corridors for amphibian species migrating to and from the vernal pool during the breeding season would be maintained through the preservation of contiguous upland forest located east and west of the pool. Moreover, no work would occur within 250 feet of the vernal pool boundary.

The removal of Barstows Dam will result in the conversion of open water habitat to wetland and riverine habitat and will open up a significant portion of the Cotley River for diadromous fish. The proposed improvements at the nearby Taunton Municipal Airport are expected to result in the fill of 5,000 square feet of wetland and the cutting of vegetation in another 15,000 square feet. This represents some additional loss of habitat in the general vicinity, approximately a mile east of the proposed casino location.

No other projects nearby to the Project Site were identified as having significant wildlife habitat impacts. Projects that are undergoing MEPA review will be reviewed by the state resource agencies including the Massachusetts Natural Heritage and Endangered Species Program (NHESP) and MassDEP and it can be presumed that they will be designed to minimize impacts to and mitigate to the extent practicable loss of wildlife habitat. Therefore, cumulative effects to wildlife habitat are not expected to be significant.

8.21.6.6 Oil and Hazardous Materials

The Site and construction do not pose any unusual risk, and the potential for release of hazardous materials during construction of Alternative A would be typical for a large, commercial development. Mitigation is included in **Section 8.6.5** to reduce potentially significant impacts resulting from hazardous materials spills or releases during construction to less-than-significant levels.

Projects included in the cumulative effects analysis are not anticipated to include activities that would have a high potential to result in hazardous materials contamination. It is noted that, according to the ENF filed for the Taunton Municipal Airport improvements, the airport was planning fuel tank upgrades and upgrading of its Stormwater Pollution Prevention Program (SWPPP) and Spill Prevention Control and Countermeasure (SPCC) plan. The other developments considered in the cumulative analysis would be required to adhere to applicable state and municipal regulations in the delivery, handling, and storage of hazardous materials, thereby reducing the risk of accidental exposure to the public's health and welfare. Therefore, there are no significant cumulative hazardous materials issues associated with Alternative A.

8.21.6.7 Water Supply

As described in **Section 7.7**, The City of Taunton will supply water to the Project Site. The City of Taunton receives its water from the Assawompset Pond Complex in Lakeville, Middleborough, Rochester and Freetown and the Dever Wells located in Taunton. Between these two sources, the City of Taunton is authorized to withdraw 7.49 million gallons per day (MGD) of water.

The Assawompset Pond Complex (APC) safely yields 27.5 MGD.⁵ Of this amount, the City of Taunton is allowed to withdraw 7.29 MGD and the City of New Bedford is allowed to withdraw the remaining 18.27 MGD.⁶ The average day raw water withdrawals from 2007 to 2011 are listed for each community in **Table 8.21-2** below. The available withdrawal remaining is calculated based on total APC withdrawal for each community.

**TABLE 8.21-2
AVERAGE DAY RAW WATER WITHDRAWALS BY COMMUNITY**

Year	Taunton		New Bedford	
	Average Day Demand* (MGD)	Available Withdrawal Remaining (MGD)	Average Day Demand** MGD	Available Withdrawal Remaining (MGD)
2007	6.78	0.51	12.63	5.64
2008	7.20	0.09	11.66	6.61
2009	6.68	0.61	10.80	7.47
2010	6.06	1.23	12.78	5.49
2011	5.79	1.50	12.13	6.14

*City of Taunton MADEP Annual Statistical Reports, for calendar years 2007 thru 2011.

** City of New Bedford MADEP Annual Statistical Reports, for calendar years 2007 thru 2011.

The available withdrawal amounts for the City of Taunton have been generally increasing over the last five years based on a declining average day demand. The average available withdrawal over the last five years is 0.788 MGD. This includes existing demand at the LUIP.

Demand projections for the City of Taunton's Water System were prepared in 2009 by the Massachusetts Department of Conservation and Recreation (DCR) Office of Water Resources. These projections assumed an increasing population, and included additional development in the Myles Standish Industrial Park and development of a new industrial park in Lakeville that would be serviced by the City. The DCR provided two scenarios for the demand projections. The first assumed 65 gallons per capita per day for residential use (RGPCD) and a ten percent unaccounted for water (UAW) rate, the second assumed the current (2009) 59 RGPCD and 12.1 percent UAW. Both projections include service to out-of-town populations in Norton, Raynham, Berkley and Lakeville that are currently serviced by the City, along with water that the City wholesales to the North Dighton Fire District and the Bridgewater Correctional Institute.

Both models have a five percent buffer that accommodates for uncertainty in growth projections. The base service population in 2009 used by the DCR was 57,036. The DCR report summarizes the projected service population and water demand in the years 2015, 2020, 2025, and 2030. A summary of these

⁵"Investigation of Surplus Safe Yield Available to New Bedford"; Camp, Dresser and McKee; June 1988

⁶ Massachusetts Department of Environmental Protection (MADEP) Water Management Act Registrations and Permits for both communities

projections is presented in **Table 8.21-3**. These population and demand projections served as the basis for the increase in Taunton's Water Management Act permit (WMA) with the addition of the Dever wells.

**TABLE 8.21-3
DCR SERVICE POPULATION AND DEMAND PROJECTIONS FOR CITY OF TAUNTON**

Year	Population	Water Demand Projection 65 RGPCD and 10% UAW (MGD)	Water Demand Projection 59 RGPCD and 12.1% UAW (MGD)
2015	63,262	7.06	6.98
2020	65,120	7.23	7.14
2025	66,676	7.36	7.27
2030	68,232	7.49	7.40

Following the 2009 evaluation by DCR, the Water Management Act Permit for Taunton was updated in 2011. At that time, the City of Taunton was authorized a total withdrawal of 7.49 MGD taken from the APC (7.29 MGD) and the Dever School Wells (0.20 MGD).

As shown in **Table 8.21-3**, the City of Taunton is currently permitted a withdrawal that is conservatively estimated to be sufficient until the year 2030. Therefore, the water demand of the Proposed Development is not expected to have any significant cumulative effects with regard to water supply.

The City's Water Treatment Plant in Lakeville can supply 14 MGD of treated water. Over the last five years, there has been an average capacity available of 2.834 MGD at the treatment plant as shown previously in **Table 7.7-3**. With a demand of 0.309 MGD for Alternative A, the City would have 2.525 MGD of treatment capacity available, which is sufficient to allow for anticipated demand growth.

8.21.6.8 Wastewater

As described in **Section 8.8**, all wastewater from the Proposed Development, estimated at 225,000gpd, will be discharged to the municipal sewer system as agreed to in the Intergovernmental Agreement signed entered into with the City of Taunton. The Tribe will upgrade the wastewater collection system to accommodate increased flows from the Project Site by constructing two new dedicated pumping stations and upgrading the existing Route 140 pump station. The Tribe has also agreed to remove inflow and infiltration at a rate of five gallons for every one gallon of proposed wastewater. This will result 1.125 million gallons of I/I removal, effectively increasing the capacity of the wastewater treatment facility.

As described in the EIR for the Myles Standish Industrial Park, the Park's expansion is expected to send approximately 145,500 gpd of wastewater flows to the Taunton WWTF. This will be mitigated for by the removal of approximately 727,500 gpd of I/I. The project will also reconstruct the on-site collection system.

The City of Taunton is currently working on the Final EIR for its updated Comprehensive Wastewater Management Plan (CWMP) which will likely be submitted in early 2014. As part of the CWMP, the City is planning an expansion and upgrade of the WWTF to receive projected flow increases and comply with more stringent discharge permit requirements. Design of the plant upgrade/expansion is anticipated to begin in 2014, upon effectiveness of a new NPDES discharge permit. The Final EIR for the updated CWMP will provide information regarding the Proposed Development as well as updated information on

the City's Sewer Rehabilitation Program. Therefore, because the City is planning to upgrade its facilities and because the Project's impacts will be mitigated, no significant cumulative effects to the wastewater system are expected.

8.21.6.9 Utilities

Electricity for the Proposed Development will be provided by the municipal utility, the Taunton Municipal Light Plant (TMLP). A new substation is being planned to accommodate the Proposed Development as discussed in **Section 8.9**. The anticipated electrical power requirement for the Proposed Development is 22,428 MWh per year.

According to the TMLP 2011 Annual Report, TMLP generates its own power when ISO New England determines that electricity is needed to meet the real-time demand of the New England region and maintain an adequate reserve of resources. TMLP's Power Production Department's generating unit at the Cleary-Flood Station was on line for 65 days in 2011, for a total of 839.76 hours, generating 56,714 MW of power.⁷ TMLP has adequate capacity and infrastructure to accommodate reasonably foreseeable demand for electricity within its service area. Therefore, there are no significant cumulative effects with regard to electricity.

Gas use under the Proposed Development has been estimated at approximately 122,400 MMBtu per year. Extension of a new gas service from Middleboro Avenue will be required to provide for the water park proposed under Alternatives A. Columbia Gas has made a preliminary determination that the gas mains in the vicinity of the project are capable of supplying the estimated gas demand. A portion of the gas leading to the area in Route 140, however, would need to be upgraded to meet the project requirements. There is no shortage of natural gas supply in the area and no significant cumulative effects on gas supply are expected.

8.21.6.10 Solid Waste

The Tribe will contract with a private solid waste management company for solid waste and recycling collection and disposal services. No waste from the Tribe's development would be added to the stream hauled weekly by Allied Waste Services under the City's contract, nor would any of the casino facilities' wastes be disposed of in the Taunton Sanitary Landfill or facilities with which the landfill is to be replaced by 2016. Therefore, no cumulative solid waste impacts are expected.

8.21.6.11 Air Quality

Regional air quality in the area is generally good with background concentrations well below National Ambient Air Quality Standards (NAAQS) as shown in **Table 7.11-2**.

⁷ Taunton Municipal Lighting Plant (TMLP). 2011 Annual Report: Sustainability. Available at <http://www.tmlp.com/annualreports/11AnnualReport/sustain.html>.

Any one development project will typically generate insignificant amounts of air pollutants with respect to the regional emissions inventory. The stationary sources associated with retail/hotel-type commercial development include small heating and hot water boilers, and emergency generators whose emissions are minor compared to the more significant sources in the region. The stationary sources anticipated for the Proposed Development of this are a size such that they will not cause an exceedance of any NAAQS.

Pollutant emissions are also produced by traffic generated by employees, patrons, and deliveries. Emission estimates for the completion year of 2022 are presented in **Section 8.11**. In general, vehicular emissions are improving, due to more stringent vehicle emissions standards and improved engineering, as well as more effective inspection and maintenance programs. Thus, although regional vehicular traffic is expected to increase (with or without the project), emissions are still expected to decline from current levels and therefore no significant cumulative effects are expected.

Other projects in the area that could have an impact on air quality include the two gas fired power plant projects in Attleboro and Brockton. Both facilities would meet National Ambient Air Quality Standards (NAAQS), and air quality will not be significantly impacted.

Detailed discussions on air quality impacts are presented in **Sections 7.11 and 8.11**. Calculations are presented in **Appendix E**.

8.21.6.12 Greenhouse Gas

As discussed in **Section 8.12.3.2**, the Tribe is considering a large number of mitigation measures designed to reduce the Proposed Development's GHG emissions. They include:

The Proposed Development and Reduced Intensity Alternative cases include the following proposed GHG mitigation measures:

- Condenser Heat Recovery
- High Efficiency Water Cooled Chillers
- Air And Water Side Economizers
- Variable Air Volume Systems
- Variable Speed Pumping
- Variable Speed Cooling Tower Fans
- Demand Controlled Kitchen Exhaust
- Increased Air Filtration
- High Performance Building Envelope
- Green Roof
- Reflective Roofs
- Exterior Shading Devices (where possible)
- Premium Electric Motors

- Energy Recovery Ventilation (on all higher % outside air units)
- Demand Controlled Ventilation
- Room Occupancy Sensors For Lighting (and HVAC in future hotel rooms)
- Daylighting (where possible)
- Reduced Lighting Power Density (below ASHRAE guidelines)
- High Performance Lighting
- Low Flow Fixtures
- Energy Star Appliances
- Rainwater Harvesting (To Be Used For Irrigation)
- Energy Management System
- Enhanced Commissioning and
- Enhanced Refrigerant Management

Projects that require an EIR pursuant to MEPA must comply with the State's Greenhouse Gas Emissions Policy. The general requirement of the Policy is that project proponents quantify the potential annual GHG emissions from their proposed project according to a quantification protocol, and report the results of that analysis in the EIR. Project proponents are required to calculate the project baseline (i.e., a standard code compliant case) in accordance with the protocol set out in the policy and then estimate emissions associated with a preferred alternative that outlines and commit to mitigation measures. To demonstrate the efficacy of the mitigation, the proponent must measure and present the emissions reductions and energy savings that will be achieved by the proponent's preferred alternative against the project baseline and also discuss the rationale and emissions reduction potential of measures that were not selected for the preferred alternative.

The majority of projects identified in this cumulative effects analysis will be subject to MEPA review and the GHG Policy. It can be assumed that those projects, should they reach construction, will have taken measures to reduce GHG emissions.

As discussed in **Section 8.12.4**, the Proposed Development's projected GHG emissions were evaluated in terms of overall global CO₂ emissions to provide context on their significance. As shown in **Table 8.12-14**, the Proposed Development's approximately 22,327 tons of CO₂ emissions will represent 0.00006% of global emissions and therefore will not cause or significantly contribute to any substantive or measurable change in global atmospheric concentrations.

8.21.6.13 Cultural Resources

Expected impacts to cultural resources are discussed in **Section 8.13**. The Proposed Development would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site (19-BR-500). First Light 1-4 sites were identified as potentially significant, however, to determine if any of the sites meet the criteria for National Register eligibility, a site examination must be undertaken if avoidance is not possible. It is

anticipated the MHC will request site examinations be undertaken for these sites. The East Taunton Industrial Park 2 Site (19-BR-900) was recommended as eligible for listing in the National Register. It is anticipated the MHC will recommend this site as eligible for listing on the National Register.

Through these consultations described in **Section 8.13.2**, the Tribe will ensure that any potential impacts of the design, construction, or use of facilities on historic or archaeological resources on the Project Site will be avoided, minimized, or mitigated.

The Taunton Municipal Airport improvements project has the potential to affect cultural resources. According to the ENF submitted to the MEPA Office, currently undisturbed areas that will be affected by the project have been identified as being potentially archaeologically sensitive by the MHC. The project proponent will consult with the MHC through the Section 106 and/or State Register Review process to ensure that any resources present are avoided, minimized, or mitigated.

It can be presumed that all of the projects being reviewed by MEPA for which any known cultural resources, either historic or archaeological, will be reviewed by the MHC and that appropriate avoidance, minimization, and mitigation will be incorporated into the projects.

Because the Proposed Development will mitigate for any impacts to cultural resources and because no other specific impacts to cultural resources have been identified nearby, no significant cumulative effects are expected.

8.21.6.14 Noise

A noise impact analysis was conducted as described in **Section 8.14**. The results indicate that the Proposed Development will not result in any significant adverse noise impacts. The analysis incorporated existing background noise levels in the area which were modeled based on field measurements. MassDOT will conduct a noise impact analysis as part of the environmental review for the future reconstruction of the Route 24/140 Interchange and will evaluate the need for mitigation in accordance with its July 2011 Highway Noise Abatement Policy. No other projects have been identified in the area that would be expected to result in any significant noise increases. Therefore, no significant cumulative noise impacts are expected.

8.21.6.15 Visual Impacts

The Proposed Development would convert the Project Site from an industrial park development with warehouse-style architecture and small landscaped areas to a destination resort casino with architectural elements representing the Mashpee Wampanoag Tribe and its cultural heritage. Building designs include components specific to the natural elements of the Project Site and its surroundings.

As described in **Section 8.15.1.2**, based upon the surrounding topography and partially forested nature of the surrounding area, the Proposed Development will be visible from a fairly limited area, mostly confined to the roads and neighborhoods in the Project's immediate vicinity.

The use of materials and color selections in the new buildings would serve to ground the Proposed Development in its location and thus minimize concerns that the buildings might appear imposing, as described in **Section 8.15.2.1**. The tallest elements, the two casino hotels on the southern end of the Project Site, would be constructed of medium to low-reflective glass that would partially reflect the surrounding sky and environment, while minimizing glare.

No other significant new construction projects were identified in the area that would create changes in the visual surroundings that would be out of scale or character.

Because the Proposed Development will have a limited viewshed and be designed so as to be compatible with its surroundings and because no other significant visual impacts from other projects nearby were identified, cumulative visual impacts will not be significant.

8.21.6.16 Socio-Economics

Economic Impact

As discussed in **Section 8.16.4**, the construction and operation of the Proposed Development would result in increased economic activity that would benefit the Tribe, the economies of Bristol and Plymouth Counties, as well as the broader Massachusetts economy. The construction period economic effects would stem from the direct construction spending and employment from the Project, and would also include the secondary, or indirect, economic activity generated throughout the economy by the direct construction-related spending. Economic benefits associated with the ongoing operation of the Proposed Development would stem from annual operational spending, on-site employment, and associated wages and salaries. To the extent that the economic activity is taxable, annual tax revenues also would be generated from the operation of the Proposed Development. Direct operational spending and employment would generate additional indirect economic benefits as employee salaries and operational funds are re-circulated through the local and statewide economy

Table 8.16-2 presents the total economic impact on Bristol and Plymouth Counties expected from the construction of the casino. Impacts include a total of 3,902 total jobs (including indirect and induced) per year during construction, that would result in an estimated total employee earnings (including indirect and induced) of \$192.86 million per year. Total economic output (including indirect and induced) is estimated at \$708.61 million.

Table 8.16-3 presents the total economic impact on Bristol and Plymouth Counties expected from the ongoing operation of the casino. Impacts include a total of 5,040 total jobs (including indirect and induced) per year, that would result in an estimated total employee earnings (including indirect and induced) of \$147.57 million per year. Total economic output (including indirect and induced) is estimated at \$482.50 million.

Other projects identified in this cumulative impact analysis, such as the developments listed in **Table 8.21-1** would also be expected to create jobs and earning during construction and ongoing operation and therefore would have a beneficial impact on the local economy. MEPA does not require an economic benefits analysis, and no attempt has been made to model the impact of those projects to the economy.

Casinos in other regions of the state are also expected to have an overall positive impact on the economy of the Commonwealth, as each must invest at least \$500 million in the project's development as required by the state's Expanded Gaming Legislation. The Tribe and its financial consultants have scaled the Proposed Development to maximize benefits, recognizing the likelihood of competing casinos located in the other regions of the state. Of the casinos and slot parlors thus far proposed, the slot parlor establishment in Raynham would be that which would be nearest to the Proposed Development and the only other gaming establishment within Bristol and Plymouth Counties. (The slot parlor establishment proposed in Plainville would be in Norfolk County just outside Bristol County.) At this time, it is not known which facilities (if any) among those that have submitted preliminary applications will receive a license and move to construction.

Community Services

Police

As discussed in **Section 8.16.1.1**, the new employees and visitor population introduced by the Proposed Development would create additional demand for police services. In order to meet this demand, as stipulated in the IGA, the Tribe would pay a one-time cost of approximately \$2.982 million and annual costs of \$2.5 million to fund the creation of a new police substation to accommodate the increased daily population in East Taunton, the purchase of new patrol cars, and the hiring of additional officers.

Some research suggests that the presence of a casino in an area may result in an increase in criminal and anti-social behavior in that area; however, a direct correlation between casino gambling and increases in local crime rates has not been definitively established. Pathological gamblers are more likely to commit crimes than non-pathological gamblers, and pathological gamblers are estimated to be approximately 1.2 to 1.5 percent of the adult population.⁸ A small percentage of casino visitors residing in the local area may exhibit pathological gambling characteristics due to the easy accessibility of the casino to their employment. In situations where this occurs, local law enforcement and local social services agencies may experience an increased demand for services. The Tribe has acknowledged that the Proposed Development may negatively affect people who suffer from problem or pathological gambling addiction disorders. The Tribe would support problem gambling education, awareness, and treatment, through a one-time contribution of \$60,000 and annual contributions of \$30,000 to a local center for the treatment

⁸ U.S. Department of Justice, Office of Justice Programs, National Institute of Justice. July, 2004. Gambling and Crime Among Arrestees: Exploring the Link. Available at <https://www.ncjrs.gov/pdffiles1/nij/203197.pdf>.

of compulsive gambling. Furthermore, the Tribe would provide training to front line staff in recognizing compulsive gamblers and would make information available and accessible for such individuals seeking assistance for problem gambling.

Given the proximity of the proposed slot machine parlor in Raynham, and to a lesser extent the one proposed in Plainville, those facilities, should one of them receive a license, could have a cumulative impact to police and local services for the reasons described above.

Other projects considered in this cumulative effects analysis would not be expected to have any significant impact on local police services in Taunton. No significant impacts to police services are expected.

Criminal Justice System

As discussed in **Section 8.16.1.1**, the Proposed Development is not expected to result in a significant adverse impact on the criminal justice system. The most likely scenario to put a burden on the criminal justice system would be the presence of pathological gamblers, who have higher arrest rates than non-pathological gamblers. However, as explained above, pathological gamblers represent only 1.2 to 1.5 percent of the adult population. The Massachusetts District Court system handled 205,570 criminal cases in 2010; any increase resulting from the Proposed Development would represent a negligible increase in the overall caseload. In addition, the terms of the IGA requiring payment for the creation of a local center for the treatment of compulsive gambling would serve to lessen any additional burden on the criminal justice system.

Given the proximity of the proposed slot machine parlor in Raynham, and to a lesser extent the one proposed in Plainville, those facilities, should one of them receive a license, could have a cumulative impact to local district courts for the reasons described above.

Other projects considered in this cumulative effects analysis would not be expected to have any significant impact on the criminal justice system, and no significant cumulative effects are expected.

Fire Protection

As discussed in **Section 8.16.1.1**, the Proposed Development would place some additional burdens on the Taunton Fire Department (TFD) due to the increase in visitors to the area and the additional households expected as a result of the project-generated employment. Under the terms of the IGA, however, the Tribe would pay the City a one-time cost of \$2.14 million for Phase 1 of the Proposed Development (all casino, hotel, and infrastructure south of the rail line), a one-time cost of \$720,000 for Phase 2 (water park, hotel, and related infrastructure north of the rail line), and annual costs of \$1.5 million for fire protection infrastructure improvements. These costs would cover upgrades to the East Taunton fire station, the purchase of one additional ladder truck, and the hiring of a fire inspection official and fire officers. As the IGA is based on the estimated increased demand introduced by the Proposed

Development, this provision of funding for TFD by the Tribe would offset any additional demand placed on the TFD by the Proposed Development. Therefore, the Proposed Development would not result in any significant adverse impacts to fire protection services.

None of the other projects considered in this cumulative effects analysis, with the possible exception of the Myles Standish Industrial Park (MISP) Expansion, would be expected to result in any increased demand for fire protection services. The MISP Expansion, since it will result in approximately 1.3 to 1.8 million square feet of new development requiring fire protection represents a minor cumulative impact. Overall, however, no significant cumulative effects to Taunton's Fire Protection Services are expected.

Emergency Medical Services and Hospitals

As discussed in **Section 8.16.1.1**, the Proposed Development would introduce new worker and visitor populations to the City of Taunton, as well as new residents as a result of project-generated employment. These new visitors, residents, and employees would create new demands on existing ambulance and hospital services. The new households could create additional demand for both in-patient and outpatient (emergency room) services, while the new visitors would only create new demand for emergency room services. Overall, compared to the 7,496 households served by Morton Hospital in fiscal year 2011, the project-generated population would represent a marginal increase in demand. In Massachusetts, it can be assumed that nearly all persons will have health insurance. Therefore, use of emergency room services is expected to be lowered because of the accessibility of preventive care through health insurance. The visitor population also could create additional demand for emergency room services, but this demand would be a small portion of the 52,794 emergency room cases handled by Morton Hospital annually. Overall, the Proposed Development would not result in any significant adverse impacts to emergency medical services and hospitals.

None of the other projects considered in this cumulative effects analysis would be expected to result in any significant increased demand for hospital services; therefore, no cumulative impact is expected.

Schools

As discussed in **Section 8.16.1.1**, the Proposed Development would not be expected to result in any significant adverse impacts on City of Taunton School District schools, or on schools in the adjacent Bristol and Plymouth County districts. Most jobs at the Proposed Development will be filled by persons already residing within the Study Area and presumed to already be a part of local school districts. Additional demand for school seats generated by persons moving to the area would likely be spread over several school districts and would not overburden any particular district. Furthermore, the existing school system in Taunton and Bristol and Plymouth County have recently experience declining enrollments and as a result are likely to have excess capacity to absorb new students without the need for capital expenditures or hiring to accommodate them.

According to the terms of the IGA, the Tribe would pay the City of Taunton \$370,000 annually as increased local contribution to the Taunton School District. The Taunton School District could use these additional funds as needed based on any new burdens that result from an increased student population.

None of the other projects considered in this cumulative effects analysis would be expected to result in any significant increased demand for school services in Taunton or the surrounding communities; therefore, no cumulative impact is expected.

8.21.6.17 Environmental Justice

As described in **Section 8.17**, the Proposed Development is not expected to result in any disproportionately high and/or adverse effects on minority and low-income populations. Therefore, no direct environmental justice concerns from the casino are expected.

Census Tract 6141.01 Block Group 3 exceeds the proportions of minority population and population living below the poverty level in Bristol County, this census tract is considered an Environmental Justice Community. This census tract is located in west of Route 24. Other projects considered in the cumulative effects analysis that will occur within this census tract include a number of the transportation projects, including the South Coast Rail Project.

According to the DEIS for the South Coast Rail Project, the project's proposed Taunton Depot Station would be a new train station constructed along the New Bedford Main Line that would serve all rail alternatives. It would be located at 872 County Street in Taunton, at the rear of the existing Target Plaza, which is within Census Tract 6141.01 Block Group 3. The proposed 14-acre station site is currently an undeveloped parcel.

Despite being within Census Tract 6141.01 Block Group 3, the South Coast Rail DEIS reports that there are no environmental justice neighborhoods present within 0.5 mile of the Taunton Depot Station site. The DEIS also states, however, that statistical information suggests that the Taunton environmental justice population may benefit from access to transit services at the Taunton Depot Station. The site is approximately 2.25 miles from downtown Taunton, where 12.7 percent of the population is defined as living in environmental justice neighborhoods. These neighborhoods are identified as meeting minority and/or income environmental justice criteria.

The DEIS also states that only 9.3 percent of the households in Taunton had no registered motor vehicles in 2000, compared to a statewide average of 12.7 percent. Based on these data, this portion of the environmental justice population in Taunton in particular is likely to realize an improvement in local employment and access to transit services for employment and/or educational opportunities outside the community.⁹

⁹ U.S. Army Corps of Engineers New England District. February, 2011. Draft Environmental Impact Statement/Draft Environmental Impact Report on the South Coast Rail Project proposed by the Massachusetts Department of Transportation (NAE-2007-00698, EEA No. 14346).

Other projects identified within nearby Census Tract 6141.01 Block Group 3 include:

- Improvements to Hart's Four Corners (Route 140/Hart Street intersection) in Taunton;
- The reconstruction of the Route 24/140 Interchange; and
- The reconstruction of Route 140 between Route 24 and Taunton Depot Drive.

These projects would be expected to have an overall beneficial impact on the area. By improving traffic flow, they will likely improve air quality.

The Proposed Development is expected to have a positive impact on the local economy. As discussed in **Section 8.16**, the direct effect on the local economy from Alternative A, measured as economic output or demand, is estimated at approximately \$279.6 million. Furthermore, the Proposed Development is expected to add approximately 3,500 permanent full-time and part-time jobs. This would be a positive impact for the low-income community because these positions, even lower wage positions, would increase the market demand for labor and the number of jobs available in the community.

Because the Proposed Development is not expected to have any direct adverse impacts on Environmental Justice Communities, and will in fact provide economic benefit to the area, and because other projects are also expected to have beneficial impacts, no adverse cumulative environmental justice impacts are expected to occur.

8.21.7 ALTERNATIVE B: REDUCED INTENSITY I

8.21.7.1 Transportation

As described in **Section 8.1.3.5**, vehicle traffic resulting from the development of Alternative B would be less than that of Alternative A. Mitigation measures, described in **Section 8.1.3.6**, would further reduce the impacts of Alternative B on regional transportation. Build operating conditions under Alternative B with the addition of the MassDOT Option 1D improvements to the Route 24/Route 140 Interchange would include lower vehicle densities during peak hours than those described in **Section 8.21.6.1** for Alternative A. All other projects of regional significance and their effects, described previously in this section, would also remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on transportation would be reduced compared to those described above for Alternative A.

8.21.7.2 Floodplain, Wetlands and Other Waters of the U.S.

The development of Alternative B would involve approximately 0.15 acre of total permanent alterations to waters of the U.S. and approximately 0.13 acre of total temporary alterations to waters of the U.S. These direct impacts would be reduced compared to Alternative A because Alternative B would not involve the significant off-site improvements of the Route 24/Route 140 Interchange and new Route 140 NB Ramp (Option 1) described as part of Alternative A. Secondary effects to aquatic ecosystems would be equivalent under Alternatives A and B. Further, Alternative B would involve avoidance, minimization, and compensatory mitigation measures as described under Alternative A. Details on these impacts are provided in **Section 8.2.2.2**. All projects of regional significance and their effects, described

previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on floodplain, wetlands, and other waters of the U.S. would be reduced compared to those described above for Alternative A.

8.21.7.3 Stormwater

The development of Alternative B would result in an increase in impervious area on the Project Site compared with present conditions. Because of its reduced footprint of the casino and related facilities compared with Alternative A, Alternative B would generate less stormwater runoff on the Project Site compared to Alternative A. As described in **Section 8.3.2.2**, Alternative B would involve a stormwater management system that would closely resemble that of Alternative A and would be sufficient to provide the required water quality and recharge volumes and meet or reduce peak runoff rates for the 2-, 10- and 100- year, 24 hour, Type III storm events. Because Alternative B would not involve the significant off-site improvements of the Route 24/Route 140 Interchange and new Route 140 NB Ramp (Option 1) described as part of Alternative A, no significant off-site impacts to stormwater would occur under Alternative B. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on stormwater would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.7.4 Geology and Soils

As described in **Section 8.4.3**, impacts of the development of Alternative B on the Project Site's topography, Prime and Important Soils, and geology would be equivalent to those anticipated under Alternative A. Erosion and sediment control measures described under Alternative A would also be the same for Alternative B. Alternative B would not involve off-site impacts or mitigation, because it would not include the significant off-site improvements of the Route 24/Route 140 Interchange and new Route 140 NB Ramp (Option 1) described as part of Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on geology and soils would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.7.5 Rare Species and Wildlife Habitat

As under Alternative A, the development of Alternative B would have no adverse effects on state or federally-listed threatened or endangered species or in areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds. Secondary impacts to upland forest communities associated with the Cotley River and impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 would be minimized, as described in **Section 8.5.1.2**. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on rare species and wildlife habitat would be reduced compared to those described above for Alternative A and not expected to be significant.

8.21.7.6 Hazardous Materials

The Site and construction of Alternative B would not pose any unusual risk, and the potential for release of hazardous materials during construction of Alternative B would be typical for a large, commercial development. As described in **Section 8.6.5**, mitigation measures would reduce potential impacts to less-than-significant levels. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B related to hazardous materials would be substantially similar to those described above for Alternative A and not expected to be significant.

8.21.7.7 Water Supply

As described in **Section 8.7.3**, the development of Alternative B on the Project Site would require approximately 0.163 MGD to be supplied by the City of Taunton. As under Alternative A, this amount of water is well within the City's remaining permitted withdrawal from the APC and Dever Wells, as well as the capacity of the City's Water Treatment Plant. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on water supply would be reduced compared to those described above for Alternative A.

8.21.7.8 Wastewater

Approximately 103,000 gpd of wastewater would be generated by the development of Alternative B on the Project Site, as described in **Section 8.8.3**. As under Alternative A, this wastewater would be discharged to the municipal sewer system, and the Tribe would be responsible for the construction of two new pumping stations. I/I removal under Alternative B would be 0.5 million gallons, which would effectively increase the capacity of the WWTF and accommodating the added flow. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on wastewater would be further reduced compared to those described above for Alternative A.

8.21.7.9 Utilities

As described in **Section 8.9.2**, the development of Alternative B would result in an electrical power requirement of approximately 15,561 MWh per year and a natural gas requirement of approximately 58,300 MMBtu per year. These demands represent reductions compared to Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on local utilities would be further reduced compared to those described above for Alternative A.

8.21.7.10 Solid Waste

Because of the reduction in casino, restaurant, and hotel facilities compared to Alternative A, the development of Alternative B would result in the generation of a smaller amount of solid waste, as described in **Sections 8.10.1 and 8.10.3.2**. As under Alternative A, the Tribe would be responsible for contracting with a private solid waste management company, and neither the City nor its contracts would be impacted by the solid waste generated on the Project Site. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B related to solid waste would be further reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.7.11 Air Quality

The development of Alternative B would result in the generation of a smaller amount of VOC and NO_x air pollutants than Alternative A, as shown in **Sections 8.11.2 and 8.11.3**. As described above in **Section 8.21.6.11**, vehicular and stationary source emissions from the Proposed Development are not expected to contribute significantly to cumulative effects on the region's air quality. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on air quality would be further reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.7.12 Greenhouse Gas

Like Alternative A, development under Alternative B would involve a large number of mitigation measures designed to reduce GHG emissions, described in **Section 8.12.3**. As shown in **Table 8.12-13**, Alternative B would result in less direct, indirect, and transportation-related GHG emissions than Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on GHG emissions and concentrations would be further reduced compared to those described for Alternative A, and not expected to be significant.

8.21.7.13 Cultural Resources

As described in **Section 8.13.1.2**, the development of Alternative B would impact the potentially significant First Light 1-4 sites and the Industrial Park 2 Site recommended for listing in the National Register, just as Alternative A would. The Tribe would ensure that any potential impacts of the design, construction, or use of facilities on historic or archaeological resources on the Project Site would be avoided, minimized, or mitigated. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative B. Therefore, the cumulative effects of Alternative B on cultural resources would be further reduced compared to those described for Alternative A, and not expected to be significant.

8.21.7.14 Noise

The results of the noise impact analysis of Alternative B, described in **Section 8.14.2.2**, indicated that this development would not result in significant adverse noise impacts. All projects of regional significance and their effects, none of which would be expected to result in any significant noise increases, would remain the same under Alternative B. Therefore, no cumulative effects of noise would be expected under Alternative B.

8.21.7.15 Visual

As under Alternative A, the development of the Project Site under Alternative B would involve converting an industrial park development with warehouse-style architecture and small landscaped areas to a destination resort casino with architectural elements representing the Tribe and the natural elements of the surroundings. As described in **Section 8.15.1.2**, the development of Alternative B, which would not include the two 15-story casino hotels, would be less visible in the region outside of the Project Site than the Proposed Development under Alternative A. All projects of regional significance and their effects, none of which would be expected to result in changes in visual surroundings that would be out of scale or character, would remain the same under Alternative B. Therefore, the no cumulative effects to visual aesthetics would be expected under Alternative B.

8.21.7.16 Socioeconomic

Economic Impact

Like Alternative A, as described in **Section 8.16.4.5**, Alternative B would result in substantial economic benefits derived from new jobs and spending on the Project Site during project construction and operation. Alternative B includes roughly 54 percent of the casino space, one third of the hotel rooms, 43 percent of the restaurant seats, and fewer employee dining room seats compared to Alternative A, and this reduced development program would result in reduced economic benefits both during construction and ongoing operation of the Project. Total employment, employee compensation, and economic output associated with the construction and operation of Alternative B would be expected to decrease roughly proportionately with decreases in the square feet of particular uses compared to Alternative A. All projects of regional significance and their effects would remain the same under Alternative B. Therefore, the development of Alternative B would be not be expected to contribute negative cumulative effects to the economy.

Community Services

As described in **Section 8.16.1.2**, compared to the Proposed Development under Alternative A, fewer employees would be needed to staff the Alternative B development, and annual visitation to the Project Site would be less than anticipated for Alternative A. Due to the decrease in the number of project-related jobs and visitors under this Alternative, demand for community services and infrastructure including police and fire protection, criminal justice system, emergency medical services and hospitals, and schools would be less compared with Alternative A. Payments from the Tribe to the City of Taunton

would be reduced in proportion to the reduction in the size of the development program and anticipated impacts. All projects of regional significance and their effects would remain the same under Alternative B. Therefore, the development of Alternative B would not be expected to contribute significant cumulative effects to local community services.

8.21.7.17 Environmental Justice

As described in **Section 8.17.1.2**, the development of Alternative B, like that of Alternative A, would not be expected to have any significant adverse impacts on the Environmental Justice Community within Census Tract 6141.01 Block Group 3. Transportation improvement projects in the area would be expected to have an overall beneficial impact on the area by improving traffic flow and air quality. Development under Alternative B would also be expected to have a positive effect on the local economy and low-income community, albeit a smaller benefit than that of the Proposed Development, in the forms of economic output, demand, and job opportunities as described in **Section 8.16**. Because Alternative B is not expected to have any direct adverse impacts on Environmental Justice Communities, and would in fact provide economic benefit to the area, and because other regional projects, as described above, are also expected to have beneficial impacts, no adverse cumulative effects related to environmental justice would be expected under Alternative B.

8.21.8 ALTERNATIVE C: REDUCED INTENSITY II

8.21.8.1 Transportation

As described in **Section 8.1.3.7**, vehicle traffic resulting from the development of Alternative C would be substantially the same as that of Alternative A. Mitigation measures, described in **Section 8.1.3.4**, would reduce the impacts of Alternative C on regional transportation. Build operating conditions under Alternative C with the addition of the MassDOT Option 1D improvements to the Route 24/Route 140 Interchange would include equivalent vehicle densities to those described in **Section 8.21.6.1** for Alternative A. All other projects of regional significance and their effects, described previously in this section, would also remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on transportation would be equivalent to those described above for Alternative A.

8.21.8.2 Floodplain, Wetlands and Other Waters of the U.S.

The development of Alternative C would involve approximately 0.46 acre of total permanent alterations to waters of the U.S. and approximately 0.35 acre of total temporary alterations to waters of the U.S. These direct impacts would be slightly reduced compared to Alternative A. Secondary effects to aquatic ecosystems would be reduced compared to Alternative A because Alternative C would involve no construction in the area north of the railroad tracks on the Project Site. Further, Alternative C would involve avoidance, minimization, and compensatory mitigation measures as described under Alternative A. Details on these impacts are provided in **Section 8.2.2.3**. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on floodplain, wetlands, and other waters of the U.S. would be reduced compared to those described above for Alternative A.

8.21.8.3 Stormwater

The development of Alternative C would result in an increase in impervious area on the Project Site compared with present conditions. Because of its reduced footprint due to the removal of development north of the railroad tracks, Alternative C would generate less stormwater runoff on the Project Site compared to Alternative A. As described in **Section 8.3.2.3**, Alternative C would involve a stormwater management system that would closely resemble that of Alternative A and would be sufficient to provide the required water quality and recharge volumes and meet or reduce peak runoff rates for the 2-, 10- and 100- year, 24 hour, Type III storm events. Impacts to stormwater related to off-site transportation improvements under Alternative C would be the same as Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on stormwater would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.8.4 Geology and Soils

As described in **Section 8.4.4**, impacts of the development of Alternative C on the Project Site's topography, Prime and Important Soils, and geology would be similar to those anticipated under Alternative A, but reduced due to the elimination of plans for development north of the railroad tracks. Erosion and sediment control measures described under Alternative A would also be the same for Alternative C. Impacts to geology and soils related to off-site transportation improvements under Alternative C would be the same as Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on geology and soils would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.8.5 Rare Species and Wildlife Habitat

As under Alternative A, the development of Alternative C would have no adverse effects on state or federally-listed threatened or endangered species or in areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds. Impacts would be similar to those described under Alternative A except that the Alternative C would avoid impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7, as described in **Section 8.5.1.3**. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on rare species and wildlife habitat would be reduced compared to those described above for Alternative A and not expected to be significant.

8.21.8.6 Hazardous Materials

The Site and construction of Alternative C would not pose any unusual risk, and the potential for release of hazardous materials during construction of Alternative C would be typical for a large, commercial development. Because Alternative C would not include any construction north of the railroad tracks, it would not have the potential to affect the buildings on the northern portion of the site that could contain

lead paint and asbestos. As described in **Section 8.6.5**, mitigation measures would reduce potential impacts to less-than-significant levels. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C related to hazardous materials would be reduced compared to those described above for Alternative A and not expected to be significant.

8.21.8.7 Water Supply

As described in **Section 8.7.4**, the development of Alternative C on the Project Site would require approximately 0.245 MGD to be supplied by the City of Taunton. As under Alternative A, this amount of water is well within the City's remaining permitted withdrawal from the APC and Dever Wells, as well as the capacity of the City's Water Treatment Plant. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on water supply would be reduced compared to those described above for Alternative A.

8.21.8.8 Wastewater

Approximately 177,000 gpd of wastewater would be generated by the development of Alternative C on the Project Site, as described in **Section 8.8.4**. This wastewater would be discharged to the municipal sewer system, and the Tribe would be responsible for the construction of a new pumping station. I/I removal under Alternative C would be 0.88 million gallons, which would effectively increase the capacity of the WWTF and accommodating the added flow. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on wastewater would be reduced compared to those described above for Alternative A.

8.21.8.9 Utilities

As described in **Section 8.9.3**, the development of Alternative C would result in an electrical power requirement of approximately 20,563 MWh per year and a natural gas requirement of approximately 90,200 MMBtu per year. These demands represent reductions compared to Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on local utilities would be reduced compared to those described above for Alternative A.

8.21.8.10 Solid Waste

Because of the reduction in casino, restaurant, and hotel facilities compared to Alternative A, the development of Alternative C would result in the generation of a smaller amount of solid waste, as described in **Sections 8.10.1 and 8.10.3.3**. As under Alternative A, the Tribe would be responsible for contracting with a private solid waste management company, and neither the City nor its contracts would be impacted by the solid waste generated on the Project Site. All projects of regional significance and

their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C related to solid waste would be further reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.8.11 Air Quality

The development of Alternative C would result in the generation of approximately the same amount of VOC and NO_x air pollutants than Alternative A, as shown in **Sections 8.11.2 and 8.11.3**. As described above in **Section 8.21.6.11**, vehicular and stationary source emissions from the Proposed Development are not expected to contribute significantly to cumulative effects on the region's air quality. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on air quality would be substantially similar to those described above for Alternative A, and not expected to be significant.

8.21.8.12 Greenhouse Gas

Like Alternative A, development under Alternative C would involve a large number of mitigation measures designed to reduce GHG emissions, described in **Section 8.12.3**. As shown in **Table 8.12-13**, Alternative C would result in less direct and indirect GHG emissions than Alternative A, and transportation-related GHG emissions would be equivalent. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on GHG emissions and concentrations would be reduced compared to those described for Alternative A, and not expected to be significant.

8.21.8.13 Cultural Resources

As described in **Section 8.13.1.3**, the development of Alternative C would impact the potentially significant First Light 1 Site but avoid the First Light 2-4 sites and the East Taunton Industrial Park 2 Site. The Tribe would ensure that any potential impacts of the design, construction, or use of facilities on historic or archaeological resources on the Project Site would be avoided, minimized, or mitigated. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative C. Therefore, the cumulative effects of Alternative C on cultural resources would be further reduced compared to those described for Alternative A, and not expected to be significant.

8.21.8.14 Noise

The results of the noise impact analysis of Alternative C, described in **Section 8.14.2.3**, indicated that this development would not result in significant adverse noise impacts. All projects of regional significance and their effects, none of which would be expected to result in any significant noise increases, would remain the same under Alternative C. Therefore, no cumulative effects of noise would be expected under Alternative C.

8.21.8.15 Visual

As under Alternative A, the development of the Project Site under Alternative C would involve converting an industrial park development with warehouse-style architecture and small landscaped areas to a destination resort casino with architectural elements representing the Tribe and the natural elements of the surroundings. As described in **Section 8.15.1.2**, the development of Alternative C, which would not include the water park and related development north of the railroad, would be less visible in the region outside of the Project Site than the Proposed Development under Alternative A. All projects of regional significance and their effects, none of which would be expected to result in changes in visual surroundings that would be out of scale or character, would remain the same under Alternative C. Therefore, the no cumulative effects to visual aesthetics would be expected under Alternative C.

8.21.8.16 Socioeconomic

Economic Impact

Like Alternative A, as described in **Section 8.16.4.5**, Alternative C would result in substantial economic benefits derived from new jobs and spending on the Project Site during project construction and operation. Alternative C would not include a water park or the associated 300 hotel rooms included in Alternative A, and this reduced development program would result in reduced economic benefits both during construction and ongoing operation of the Project. Total employment, employee compensation, and economic output associated with the construction and operation of Alternative C would be expected to decrease roughly proportionately with decreases in the square feet of particular uses compared to Alternative A. All projects of regional significance and their effects would remain the same under Alternative C. Therefore, the development of Alternative C would be not be expected to contribute negative cumulative effects to the economy.

Community Services

As described in **Section 8.16.1.3**, compared to the Proposed Development under Alternative A, fewer employees would be needed to staff the Alternative C development, and annual visitation to the Project Site would be less than anticipated for Alternative A. Due to the decrease in the number of project-related jobs and visitors under this Alternative, demand for community services and infrastructure including police and fire protection, criminal justice system, emergency medical services and hospitals, and schools would be less compared with Alternative A. Payments from the Tribe to the City of Taunton would be reduced in proportion to the reduction in the size of the development program and anticipated impacts. All projects of regional significance and their effects would remain the same under Alternative C. Therefore, the development of Alternative C would be not be expected to contribute significant cumulative effects to local community services.

8.21.8.17 Environmental Justice

As described in **Section 8.17.1.3**, the development of Alternative C, like that of Alternative A, would not be expected to have any significant adverse impacts on the Environmental Justice Community within Census Tract 6141.01 Block Group 3. Transportation improvement projects in the area would be expected to have an overall beneficial impact on the area by improving traffic flow and air quality. Development under Alternative C would also be expected to have a positive effect on the local economy and low-income community, albeit a smaller benefit than that of the Proposed Development, in the forms of economic output, demand, and job opportunities as described in **Section 8.16**. Because Alternative C is not expected to have any direct adverse impacts on Environmental Justice Communities, and would in fact provide economic benefit to the area, and because other regional projects, as described above, are also expected to have beneficial impacts, no adverse cumulative effects related to environmental justice would be expected under Alternative C.

8.21.9 ALTERNATIVE D: NO ACTION

8.21.9.1 Transportation

As described in **Section 8.1.2**, daily vehicle traffic resulting from the No Action development of Alternative D would be substantially reduced compared to Alternative A. Mitigation measures, described in **Section 8.1.2.2**, would be limited to those already planned for the region. Build operating conditions under Alternative D with the addition of the MassDOT Option 1D improvements to the Route 24/Route 140 Interchange would include lower vehicle densities than those described in **Section 8.21.6.1** for Alternative A. All other projects of regional significance and their effects, described previously in this section, would also remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on transportation would be reduced compared to those described above for Alternative A.

8.21.9.2 Floodplain, Wetlands and Other Waters of the U.S.

Alternative D would involve approximately 17,600 square feet of total permanent alternations to waters of the U.S, as described in **Section 8.2.2.4**. These direct impacts would be slightly reduced compared to Alternative A. It can be assumed that developers would comply with the Massachusetts Wetlands Protection Act and the Taunton Wetlands Protection Bylaw as necessary, and impacts would be minimized and mitigated to the maximum extent practicable. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on floodplain, wetlands, and other waters of the U.S. would be reduced compared to those described above for Alternative A.

8.21.9.3 Stormwater

Alternative D would result in an increase in impervious area on the Project Site compared with present conditions both north and south of the railroad. As described in **Section 8.3.2.4**, it can be assumed that developers of new commercial, industrial, warehouse, and office buildings resulting in increased

impervious areas would expand and create stormwater management measures as necessary and would comply with the MassDEP Standards. Impacts to stormwater related to off-site transportation improvements described under Alternative A would be eliminated under Alternative D. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on stormwater would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.9.4 Geology and Soils

As described in **Section 8.4.5**, impacts of the development of Alternative D on the Project Site's topography, Prime and Important Soils, and geology would be similar to those anticipated under Alternative A. It can be assumed that developers would use appropriate soil erosion and sediment control techniques to minimize and mitigate the potential for erosion and sedimentation. Impacts to geology and soils related to off-site transportation improvements described under Alternative A would be eliminated under Alternative D. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on geology and soils would be reduced compared to those described above for Alternative A, and not expected to be significant.

8.21.9.5 Rare Species and Wildlife Habitat

Because the Project Site contains no areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds, or habitats of state or federally-listed threatened or endangered species, Alternative D would have no direct adverse effects on rare species or wildlife habitat. Secondary impacts to upland forest communities associated with the Cotley River and impacts to Critical Terrestrial Habitat associated with the vernal pool in Wetland Series 7 could be similar to those described under Alternative A, as described in **Section 8.5.1.4**. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on rare species and wildlife habitat would be substantially similar to those described above for Alternative A, and not expected to be significant.

8.21.9.6 Hazardous Materials

The Site and construction of Alternative D would not pose any unusual risk, and the potential for release of hazardous materials during construction of Alternative D would be typical for a large, commercial development. As described in **Section 8.6.5**, it can be assumed that each developer would ensure compliance with all applicable regulations, guidelines, and standard operating procedures (SOPs). All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D related to hazardous materials would not be expected to be significant.

8.21.9.7 Water Supply

As described in **Section 8.7.5**, the development of Alternative D on the Project Site would require approximately 29,200 gallons per day (GPD) of water to be supplied by the City of Taunton. As under Alternative A, this amount of water is well within the City's remaining permitted withdrawal from the APC and Dever Wells, as well as the capacity of the City's Water Treatment Plant. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on water supply would be reduced compared to those described above for Alternative A, and would not be expected to be significant.

8.21.9.8 Wastewater

Approximately 23,200 GPD of wastewater would be generated by the development of Alternative D on the Project Site, as described in **Section 8.8.5**. This wastewater would be discharged to the municipal sewer system. I/I removal under Alternative D would be 115,000 gallons, which would effectively increase the capacity of the WWTF and accommodating the added flow. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on wastewater would be reduced compared to those described above for Alternative A, and would not be expected to be significant.

8.21.9.9 Utilities

As described in **Section 8.9.4**, the development of Alternative D would be expected to result in an electrical power requirement of approximately 12,721 MWh per year and a natural gas requirement of approximately 23,600 MMBtu per year. These demands represent reductions compared to Alternative A. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on local utilities would be reduced compared to those described above for Alternative A.

8.21.9.10 Solid Waste

The development of Alternative D would be expected to result in the generation of a smaller amount of solid waste than Alternative A, as described in **Section 8.10.3.4**. It can be assumed that owners of the office and commercial-industrial-warehouse facilities would be required to obtain contracts with private waste hauling companies, and neither the City nor its contracts would be impacted by new solid waste generated on the Project Site. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D related to solid waste would not be expected to be significant.

8.21.9.11 Air Quality

The development of Alternative D would result in the generation of significantly less air pollutants than Alternative A, primarily due to anticipated improvements in vehicle engine and emissions technologies, as shown in **Section 8.11.2**. All projects of regional significance and their effects, described previously in

this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on air quality would be less than those described above for Alternative A, and not expected to be significant.

8.21.9.12 Greenhouse Gas

As shown in **Section 8.12.2.4** and **Table 8.12-10**, Alternative D would result in significantly reduced GHG emissions compared to the Development Alternatives. Mitigation measures would be the responsibility of individual developers, owners and tenants, and could vary widely. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on GHG emissions and concentrations would be reduced compared to those described for Alternative A, and would not be expected to be significant.

8.21.9.13 Cultural Resources

As described in **Section 8.13.1.4**, the development of Alternative D would impact the First Light 1-4 sites and the East Taunton Industrial Park 2 Site as the Proposed Development would. The project proponent(s) would be required to comply with State Register Review and/or Section 106 if state and/or federal funding, licensing, permits and/or approvals were required. All projects of regional significance and their effects, described previously in this section, would remain the same under Alternative D. Therefore, the cumulative effects of Alternative D on cultural resources would be similar to those described for Alternative A, and not expected to be significant.

8.21.9.14 Noise

As described in **Section 8.14.2.4**, mechanical equipment needs of potential developers and tenants of the buildings described under Alternative D could vary widely in their noise impacts. By definition, these impacts would be equal to or louder than the existing condition sound levels. All projects of regional significance and their effects, none of which would be expected to result in any significant noise increases, would remain the same under Alternative D. Therefore, no cumulative effects of noise would be expected to be significant under Alternative D.

8.21.9.15 Visual

The development of the Project Site under Alternative D would involve expanding the current development style of warehouse-style architecture and small landscaped areas. As described in **Section 8.15.1.2**, the development of Alternative D, which would not likely include buildings significantly higher than two stories, would be only minimally visible from any off-site locations. All projects of regional significance and their effects, none of which would be expected to result in changes in visual surroundings that would be out of scale or character, would remain the same under Alternative D. Therefore, the no cumulative effects to visual aesthetics would be expected under Alternative D.

8.21.9.16 Socioeconomic

Economic Impact

Like Alternative A, as described in **Section 8.16.4.5**, Alternative D would not result in any significant adverse socioeconomic impacts. However, Alternative D would not produce significant economic benefits derived from new jobs and spending on the Project Site. Although some employment growth would occur due to expansion of existing businesses or establishment of new commercial-industrial-warehouse businesses, economic activity under Alternative D, including jobs, employee compensation, and economic output, would be small compared with Alternative A. All projects of regional significance and their effects would remain the same under Alternative D. Therefore, the development of Alternative D would not be expected to contribute negative cumulative effects to the economy.

Community Services

As described in **Section 8.16.1.4**, compared to the Proposed Development under Alternative A, significantly fewer employees would be needed to staff the Alternative D development, and annual visitation to the Project Site would be significantly less than anticipated for Alternative A. Due to the small number of project-related jobs and visitors under this Alternative, demand for community services and infrastructure including police and fire protection, criminal justice system, emergency medical services and hospitals, and schools would not result in any significant adverse impacts. All projects of regional significance and their effects would remain the same under Alternative D. Therefore, the development of Alternative D would not be expected to contribute significant cumulative effects to local community services.

8.21.8.17 Environmental Justice

As described in **Section 8.17.1.4**, the development of Alternative D, like that of Alternative A, would not be expected to have any significant adverse impacts on the Environmental Justice Community within Census Tract 6141.01 Block Group 3, as traffic operations in the area would generally remain the same as existing conditions. As described above, Alternative D would not produce significant economic benefits derived from new jobs and spending on the Project Site. Because Alternative D is not expected to have any direct adverse impacts on Environmental Justice Communities, no adverse cumulative effects related to environmental justice would be expected under Alternative D.

SECTION 8.22

RELATIONSHIP BETWEEN SHORT-TERM USES AND LONG-TERM PRODUCTIVITY

Pursuant to NEPA regulations (40 CFR 1502.16), an EIS must consider the relationship between short-term uses of the environment and the maintenance and enhancement of long-term productivity.

The long-term intentions of the proposed actions under Alternatives A, B, and C in this Draft EIS include significant enhancement of the Project Site to meet the socioeconomic needs of the Mashpee Wampanoag Tribe. Each Alternative involves short-term and long-term alterations to the physical environment of the Project Site, and mitigation measures, which have been described in **Section 8.0**.

The process of construction under each of the Alternatives would result in the short-term uses of physical, natural, and cultural resources on the Project Site. These short-term impacts would include increases in localized noise, dust, traffic, and vehicular emissions. Mitigation during construction includes measures to minimize these impacts, such as the prohibition of idling, the limitation of work to normal working hours, regular equipment maintenance, and a site entrance designated for construction vehicles. These impacts and mitigation measures are described in detail in **Section 8.19**.

Long-term environmental impacts related to the development of the land on the Project Site include increased traffic to the region, alteration of wetlands, increased stormwater runoff, increased water and utility demands, greenhouse gas and other emissions, and alterations in aesthetics. To the extent practicable, all impacts have been minimized and mitigated under all Alternatives, as described in **Section 8.0**.

Short-term and long-term use of the labor force for construction and operations under Alternatives A, B, and C would result in long-term productivity of the economic environment, including employment, personal income, and local and regional spending. Long-term benefits of the Development Alternatives include the creation of a consistent income source for the Tribe, increased local and regional employment, and increased local and regional spending. These benefits are described further in **Section 8.16** and **Section 8.20**.

While short-term impacts to the environment under Alternative D would be similar to those described above of Alternatives A, B, and C, the long-term economic productivity of the Project Site under Alternative D would be significantly reduced compared to the Development Alternatives because it would not involve the high visitation, employment, and local and regional spending anticipated for a casino development.

SECTION 8.23

IRREVERSIBLE OR IRRETRIEVABLE COMMITMENTS OF RESOURCES

A commitment of resources is irreversible when its primary or secondary impacts limit the future availability of a resource. An irretrievable commitment refers to the use or consumption of resources that are neither renewable nor recoverable for later use by future generations. The commitment of resources refers primarily to the use of nonrenewable resources such as fossil fuels, water, labor, and electricity. Expected changes resulting from each of the Alternatives include physical changes to land on the Project Site in Taunton, increased water, sewer, and utility demands, aesthetic alterations, and socioeconomic changes.

The fundamental proposed action under Alternatives A, B, and C, the BIA taking approximately 321 acres into federal trust on behalf of the Mashpee Wampanoag Tribe, would not involve any direct commitment of resources. However, once the land-into-trust process is complete, it is anticipated that the Project Site in Taunton would be developed based on one of the three destination resort casino Alternatives described in this EIS. Alternative D also anticipates the build-out of developable land on the Project Site in Taunton. Construction and operation associated with each of these development opportunities would result in irretrievable and irreversible commitments of natural, physical, and potentially cultural resources.

Construction activities would require the use of fossil fuels for electricity and for the operation of vehicles and equipment. Use of raw building materials for construction would be an irretrievable commitment of resources from which these materials would be produced. The use of water for dust abatement during construction activities would be irreversible. Development of the Project Site would also require labor that would otherwise be available for other projects, and thus this commitment of labor would be considered irretrievable. Construction of buildings on the Project Site would also result in the loss of varying amounts of soils, vegetation, and potentially cultural resources, though these and other resource losses would be minimized and/or mitigated, as described through **Section 8.0**.

Operation of the destination resort casino facilities under Alternatives A, B, and C or of the built-out industrial park under Alternative D would involve indefinite irretrievable and irreversible commitments of resources. These resources would include water, electricity, gas, fuel for vehicles, and labor. As described through **Section 8.0**, mitigation measures would relieve these commitments of resources where necessary.

SECTION 8.24

UNAVOIDABLE ADVERSE EFFECTS

While the fundamental proposed action under Alternatives A, B, and C, the BIA taking approximately 321 acres into federal trust on behalf of the Mashpee Wampanoag Tribe, would not involve any direct environmental impacts, certain adverse effects of development of the land in Taunton could not be avoided even with the application of mitigation measures. This summary is based on the environmental analysis provided in **Section 8.0** of this Draft EIS.

8.24.1 TRANSPORTATION

The development of the Project Site in Taunton under each Alternative would result in the increase of daily vehicle trips on local and regional roads. Under Alternatives A, B, and C, this increase would be significant. Measures described in **Sections 8.1.3.4, 8.1.3.6, and 9.2.1** would mitigate the traffic, air quality, and greenhouse gas impacts of this increase in vehicles on the roads.

8.24.2 FLOODPLAIN, WETLANDS AND OTHER WATERS OF THE U.S.

Each of the Alternatives would involve direct impacts and secondary effects to wetlands and other waters of the U.S. in the form of fill, stream crossing, and development involving the removal of upland forest. Under Alternatives A and C, off-site transportation improvements at the Route 24/Route 140 Interchange and access from Stevens Street to Route 140 Northbound (Option 1) would involve wetland impacts. These impacts would be minimized to the greatest extent practicable under each Alternative. Measures described in **Sections 8.2.3 and 9.2.2** would mitigate the unavoidable impacts to these wetland resources through consultation with the Army Corps of Engineers, potentially the creation of enhancement of other wetlands on the Project Site or nearby, and compensatory flood storage under Alternatives A, B, and C, or the creation of new Bordering Vegetated Wetlands in the vicinity of the impact areas under Alternative D.

8.24.3 STORMWATER

The development of the Project Site under each Alternative would involve the creation of new impervious surfaces, and thus an increase in stormwater runoff. Under Alternatives A and C, off-site transportation improvements at the Route 24/Route 140 Interchange and access from Stevens Street to Route 140 Northbound (Option 1) would also increase stormwater. As described in **Sections 8.3 and 9.2.3**, Stormwater management during and after construction and the use of Best Management Practices (BMPs) approved by the Massachusetts Department of Environmental Protection (MassDEP) should mitigate potential impacts to water quality by controlling stormwater runoff volume and discharge rates and by treating stormwater by removing pollutants prior to discharge to downstream surface waters under all Alternatives.

8.24.4 GEOLOGY AND SOILS

Clearing and grading would result in minor changes in the topography of the Project Site under each Alternative. Under Alternatives A and C, off-site transportation improvements at the Route 24/Route 140 Interchange and access from Stevens Street to Route 140 Northbound (Option 1), significant impacts to topography would be avoided using appropriate BMPs and soil erosion and sedimentation techniques. Development under each Alternative would impact currently undeveloped Prime and Important Soils, but none that are currently used for agricultural purposes. Grading and landform alteration would not adversely affect known or recorded mineral or paleontological resources under any of the Alternatives.

8.24.5 RARE SPECIES AND WILDLIFE HABITAT

No work would be conducted in areas mapped as Core Habitats, Critical Natural Landscapes, or Living Waters Critical Supporting Watersheds under any of the Alternatives. Significant off-site transportation work under Alternatives A and C would be confined to previously disturbed and developed areas proximate to existing roadways, thus resulting in negligible impacts to wildlife habitat. Development would have no adverse effects on state or federally-listed threatened or endangered species under any of the Alternatives.

8.24.6 HAZARDOUS MATERIALS

As described in **Sections 8.6 and 9.2.6**, there would be no unavoidable adverse effects related to hazardous materials on the Project Site.

8.24.7 WATER SUPPLY

New development under each of the Alternatives would increase demand for water on the Project Site, as described in **Section 8.7**. This would represent an unavoidable effect to the environment as an increase in withdrawal of a natural resource, but the demand would be within the capacity of the City of Taunton's Water Management Act and Water Treatment Plant under each Alternative.

8.24.8 WASTEWATER

New development under each of the Alternatives would increase wastewater flow and treatment demand from the Project Site, as described in **Section 8.8**. However, the new flow would be within the capacity of the City of Taunton's gravity sewers and Waste Water Treatment Facility, and inflow and infiltration removal and pumping station rehabilitation would take place to further mitigate impacts.

8.24.9 UTILITIES

New development under each of the Alternatives would increase demand for electricity and gas on the Project Site. Infrastructure updates described in **Sections 8.9 and 9.2.9** would meet these demands. Unavoidable adverse environmental effects associated with these increases in utility demands are addressed in **Section 8.24.12**.

8.24.10 SOLID WASTE

New development under each of the Alternatives would increase the Project Site's output of solid waste and recycling during construction and operation, as described in **Section 8.10**. Environmental effects would be minimized to the greatest extent practicable through the recycling program proposed under Alternatives A, B, and C.

8.24.11 AIR QUALITY

Construction under each of the Alternatives would increase motor vehicle exhaust, equipment exhaust, and fugitive dust in and around the Project Site, as described in **Section 8.19.4**. During operation, increases in associated vehicular traffic under each Alternative would cause increases in VOC and NO_x emissions and ground-level CO, described in further detail in **Section 8.11**. Stationary sources including boilers and emergency generators would also cause unavoidable adverse effects to air quality. Mitigation measures described in **Section 9.2.11** would minimize air quality impacts to the greatest extent practicable.

8.24.12 GREENHOUSE GAS

New development under each of the Alternatives would increase the direct and indirect emissions of greenhouse gasses produced by the Project Site and by related transportation, as described in **Section 8.12**. Mitigation measures, described in **Sections 8.12.3 and 9.2.12**, would increase energy efficiency and reduce demand to reduce greenhouse gas emissions to the greatest extent practicable under Alternatives A, B, and C.

8.24.13 CULTURAL RESOURCES

As described in **Section 8.13**, the development described under Alternatives A, B, and D would impact four potentially significant archaeological sites (First Light 1-4) and the East Taunton Industrial Park 2 Site (19-BR-500), which has been recommended as eligible for listing on the National Register by the project archaeologists. Alternative C would impact the First Light 1 Site. To minimize adverse effects, the Tribe would consult with the Massachusetts Historical Commission (MHC) and BIA under Alternatives A, B, and C, or project proponent(s) would comply with State Register Review and/or Section 106 if required under Alternative D, as described in **Sections 8.13.2 and 9.2.13**.

8.24.14 NOISE

Construction under each of the Alternatives would cause noise related to earth moving equipment, steel erection and concrete placement, building finishing, diesel truck traffic, and construction vehicles. Mitigation measures including noise muffler systems and limited work hours, described in **Sections 8.19.4 and 9.2.14**, would reduce the adverse effects of construction noise. Mechanical equipment associated with Alternatives A, B, and C was found not to cause significant impacts, as described in **Section 8.14**. Mechanical equipment associated with Alternative D could vary widely in noise impacts.

8.24.15 VISUAL

Because of the scale of development under Alternatives A, B, and C, some adverse effects related to the visibility of the destination resort casino facilities would be unavoidable. Under Alternatives A and C, the 15-story casino hotels and other buildings would be partially visible from areas off-site and would cause significant shadows on the Stevens Street neighborhood during late afternoon hours, especially during weeks near the Winter Solstice. The casino hotels would be eliminated under Alternative B, which would significantly reduce but not eliminate visibility and shadows. Lighting from the Project Site under Alternatives A, B, and C, is not expected to significantly impact off-site areas due to shielding by structural elements including an entrance courtyard semi-enclosed by buildings. The impacts of shadows and other visual elements are described in **Section 8.15**.

8.24.16 SOCIOECONOMIC

The majority of anticipated adverse effects of Alternatives A, B, and C would be mitigated by the Tribe through measures described in its Intergovernmental Agreement (IGA) with the City of Taunton. These mitigated impacts include increased demands for local police and fire services and increased demands for seats in local schools. Specific mitigation measures are described in **Sections 8.16.1 and 9.2.16**. These demands for community infrastructure would not be anticipated under Alternative D. The substitution effect, described in **Section 8.16.3**, represents an unavoidable adverse effect of Alternatives A, B, and C, as it would divert some spending from away from established leisure and entertainment businesses as local and regional residents chose instead to patron the destination resort casino. However, the negative consequences of this effect on particular businesses is expected to be offset by the continued support of economic activity, such as wages, purchases, and taxes, within the overall local economic sphere, and further offset by the increase in local and regional spending brought on by new employees to the casino and to positions vacated by new casino employees. Alternative D would not induce any unavoidable adverse socioeconomic effects.

8.24.17 ENVIRONMENTAL JUSTICE

As described in **Section 8.17**, potential negative impacts of Alternatives A, B, and C to an Environmental Justice Community would be limited to the traffic increase anticipated within Census Tract 6141.01 Block Group 3 in Taunton. Traffic improvements described in **Sections 8.1.3.4, 8.1.3.6, and 9.2.1**, especially those within the Block Group at Mozzone Boulevard, Erika Drive, and High Street, would mitigate any undue burden, thus relieving this Environmental Justice Community of adverse effects. There would be no negative impacts to the local Environmental Justice Community under Alternative D.